

# THE IRON AGE

Established 1855

New York, April 9, 1914

Vol. 93 : No. 15

## A Plant Devoted to Making German Silver

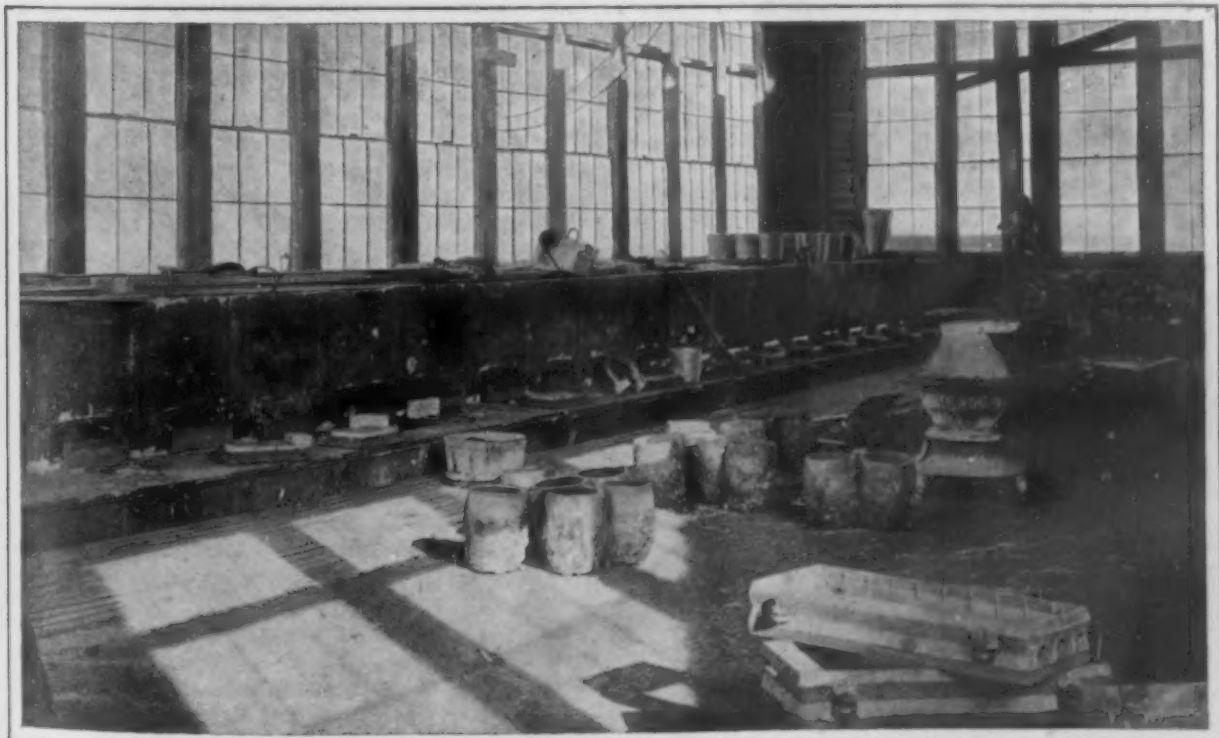
The Rapidly Widening Field Signalized by  
a Rolling Mill Built at Stamford, Conn.,  
Exclusively for Copper-Nickel-Zinc Alloys

Two facts of industrial interest were recently learned of in a visit to Stamford, Conn. One is that the consumption of German silver has been gradually expanding at a rate not generally apprehended and that its field of usefulness has widened greatly and promises to grow rapidly to still larger proportions. The other is that a plant has been erected in outlying Stamford for the exclusive manufacture of German silver in sheet and wire form, whereas the production of the copper-nickel-zinc alloys has been, usually, if not always, an adjunct of the brass rolling mill.

German silver has of course in sheet form gone almost wholly into tableware, constituting the base on which the silver plating is applied, while as a wire its largest use has been for electric resistance and electric heating apparatus. It has also in later years displaced britannia metal for hollow plated ware. While the tableware and electric industries absorb by considerable most of the production, increasing quantities are going into low-price jewelry and into keys, pocket-knife handles, etc.; and now that brass trimmings have lost in popularity with the automobile, German silver is finding a large

market in lamps, hub caps to automobile wheels and especially in the construction of automobile radiators. It takes an enumeration of some of the products made of German silver to convey an impression of the large part it now plays in the metal industry. It is used for show-case trimmings; ladies' mesh bags; typewriter key-rims; metal badges; the so-called tracker bar of the player-piano carrying the perforations over which the record passes; the appurtenances of the French cooking range; baggage checks; mountings for smoking pipes; cane and umbrella trimmings; soda fountain and bar equipments, where polished sheets find much vogue; Pullman car lavatories; toilet ware such as the brush, mirror and manicure appliances; watch cases and works, especially the low-price watches which are polished and not plated; so-called vanity and cigarette cases, clips and bows for the optical trade; pitch pipes used instead of tuning forks, and saddlery hardware, although the last is not a big use.

In the works at Stamford, which are really at Springdale, a suburb of the city, there are two main departments, one containing the melting furnaces and designated as the casting shop, as the molten



The Casting Shop Showing the Row of Melting Furnaces

alloys are cast into billets or bars, and the other, the rolling mill, where the bars are cold rolled and thus reduced by steps to the thickness wanted. The proportions of the ingredients of the alloys are of course varied in the casting shop according to the use to which the product may be put; either certain physical properties are of the greatest importance or the color, such as a golden hue or a silver whiteness, may be the essential. The alloys do not generally admit of much, if any, heating, owing to undesirable crystallization which may take place. Hence in the rolling mill cold rolling is resorted to and this can usually not safely be carried beyond reducing the thickness by over 0.10 in. in one pass. So between every allowable cold rolling reduction the material is annealed, and for the last series or finishing passes through the finishing rolls, the annealed material is pickled after each annealing operation to remove scale. German silver in the gen-

the purchaser. The works occupy a tract of  $6\frac{1}{2}$  acres alongside the New Canaan branch of the New York, New Haven & Hartford Railroad, allowing for extensive enlargement whenever necessary and having sand and gravel and considerable timber on the property, all useful for building construction. The site was chosen also with an eye to the markets for German silver. The plant is comprised chiefly in two large buildings. The rolling mill is 75 x 150 ft. with an extension 30 ft. wide open with the building for a length of 70 ft. The extension accommodates the annealing furnace and the plan is to continue this portion of the building later for the pickling department, so that then there will be an area under the one roof devoted to the rolling mill 105 x 150 ft. The casting shop lies close to the rolling mill and is 36 x 68 ft. in plan. Both buildings are of timber mill construction with a brick wall above the foundations to the line of the win-



The German Silver Rolling Mills; Breaking Down Rolls at Left, Finishing Rolls at Right; Annealing Furnace at Right Background.

eral run of commercial operations is classified and its price varies according to the percentage of nickel. At the Stamford plant, the ordinary grades run at 5, 8, 10, 12, 15, 16, 18, 20, 21, 25 and 30 per cent. nickel, but the most popular seems to be the 18 per cent. German silver, which has a maximum whiteness. If the material is to undergo a spinning operation, other things being equal, the copper is increased and the zinc decreased. When the material is for keys it is usual to add a little lead to the mixture, as this favors the subsequent milling of the key blanks. The common thickness of the metal supplied for keys is 0.093 in. but it is 0.065 in. for the thin keys made for example for safety-deposit boxes. The material going into pipe mounts is no thicker than 0.005 in. and of the 18 per cent. product.

The accompanying illustrations will give some idea of the works, which were built for the Stamford German Silver Company. At the time of the visit the equipment for making wire had not yet been installed and the output was in sheets, chiefly in long strips coiled for shipment and suited for feeding to the stamping or pressing machinery of

dow sills and they are conspicuous for the large amount of window area.

There are 20 melting furnaces in the casting shop arranged along one of the walls, as here shown. They are of the square shape, 16 in. square, taking a No. 60 crucible. The furnaces are anthracite coal burning and natural draft is employed, for which purpose a Majestic reinforced concrete chimney immediately outside rises 125 ft. to an ornamented top  $4\frac{1}{2}$  ft. in inside diameter. Immediately in front of the furnaces and over the pit the floor takes the form of a grating of parallel strips of chestnut, giving the men a footing on which they are not likely to slip and one that is not hot as a metal flooring would be. No trouble from burning from hot coals has been experienced, as the presence of a hot coal soon manifests itself. The crucibles hold about 160 lb. of metal and the metal is cast in split iron molds. The molds are poured in an inclined position and bars 60 to 150 lb. in weight are cast, depending in part on the widths to which the metal is to be rolled. A considerable amount of scrap is of course available for remelting. It appears that about 40 per cent. of the product returns for re-

manufacture, made up partly of metal in which defects have developed and rejections have been made in the works for one reason or another and partly of the unavoidable waste from the stamping machines of the consumers, although it is surprising how closely cuttings are made in some factories. For ordinary mixtures, the temperature of melting is about 2300 deg. F. The general flooring of the casting house is brick.

The bars are broken down cold as stated and for this a stand of 18-in. rolls, built by the Birmingham Iron Foundry, Derby, Conn., to the Stamford Company's designs, is installed. A second pair of rolls, for finishing, is in line with the roughing pair, and a view is given of these rolls. They are located at the end of the rolling mill building nearer the casting shop and lie along the longitudinal center line of the building. The rolls have a 36-in. width of face and ordinarily are worked for not over 30-in. width of material. The breaking-down or roughing rolls run at 18 r.p.m., and the finishing at 32 r.p.m. The cast bars, which are say 1 3/16 or 1 1/8 in. thick, are broken down by stages to No. 6 gauge when they go to the finishing rolls. The breaking-down operation must not, as mentioned, be carried too far, else the structure of the metal will be injured, so, as stated, the metal must be annealed between the breaking-down stages. At the time of the visit bars 10 in. wide were reduced from 9/16 in. to 3/8 in. in two passes before it was regarded necessary to resort to annealing. Similarly reduction in the finishing rolls from No. 6 gauge to the required thickness has to be carried on in easy stages with intermediate annealing and then in addition frequent pickling after the annealing. Besides this when the bars are brought to the 3/8-in. thickness, they go to what are known as scratches, simple machines for removing surface defects developing in the rolling. As indicated in the illustrations, the bars are fed by hand and are piled on the delivery side on wheeled trucks at the breaking down rolls and where the length has assumed proportions as at the finishing rolls, it is rolled upon a revolving cylinder as the strips come from the mill. The steps in the finishing rolls are Nos. 6, 12, 18, 21, 24, 27, 30, 32 gauges, etc.

The annealing furnace, which may be seen in the background at the right of the view of the rolls, was furnished by the W. S. Rockwell Company. It is equipped for burning oil, although designed to allow coal burning if necessary, and in connection with the oil-burning system is a 10,000-ton horizontal cylindrical steel tank outside the building filled from railroad tank cars by means of a pipe line extending from the railroad siding to the tank. Generally the bars are charged at one end of the furnace and pushed out at the other but with heavy or large loads which cannot well be handled otherwise a winch with chain is employed for hauling the table from the furnace by power. The winch is belt-driven from the shafting in the mill, which shafting, serving all the machinery in the mill, is driven from a 300-hp. 600-volt General Electric motor located below the main floor at the point in the mill view where the ventilating and light opening is shown. The floor around the furnace is concrete.

For pickling, a 26,000-lb. monolith of granite 4 ft. wide and 18 ft. long hollowed out to give a bath 3 1/2 ft. deep is provided and the pickling solution is bichromate of soda with some sulphuric acid and water which is kept warm by means of a supply of steam. There are also wooden tanks for the smaller articles and tanks also with running water for washing the bars received from the pickling tanks.

Part of the mill equipment includes three power-driven Struever scratchers, of which mention has already been made. The scraping tool, given a reciprocating motion, shaves off the faults in the surface of the bar. Where necessary sawdust is used for drying the metal and there is a table for hand drying and also a machine for sawdusting, this drawing the strip or ribbon of metal through the sawdust. This machine was built by the Torrington Mfg. Company. Near it is an edge-slitting machine for shearing the irregularities from the rolled sheets and two gang slitters for cutting a sheet simultaneously into a desired number and size of strips. These machines are of Waterbury-Farrel manufacture. Finally, leading to the shipping end of the rolling mill is a Torrington straightening roll. In connection with the plant a machine repair department is maintained with an equipment furnished by Gledhill & Co., Bridgeport, Conn., and including two lathes, one shaping and one drilling machine, besides a small forge and hand shear, which of course is also used for cutting bars in process of chopping. At the end of the mill near the casting shop, the scrap is rough baled for the melting crucibles, and a Waterbury-Farrel alligator shear is used for cutting the heavier material into short lengths for melting.

#### Waste Heat Boilers at Open-Hearth Furnaces

Interesting data relative to economies developed by the installation of waste heat boilers in connection with the open-hearth furnaces at the South works of the Illinois Steel Company are detailed in the South Works Review.

Previous to putting in the boilers all the steam used by the gas producers was obtained from the blooming mill boiler house through a long small main. This resulted in very low steam, both as to pressure and quality, at the south end furnaces. The first boiler to be put in was a small Heine of 1900 sq. ft. of water heating surface. A Buffalo fan driven by a vertical high-speed engine draws the stack gases from the furnace through the boiler and discharges back into the furnace stack. The improvement in steam conditions was very marked, the pressure then being raised from 50 to about 100 lb.

However, the results of tests showed that the boiler and fan were much too small, as only a small part of the available heat was abstracted from the waste gases, so another installation was made of two Stirling boilers of 4000 sq. ft. of heating surface and much larger motor-driven fans. As originally installed, these boilers had Vento heaters in the breeching to heat the feed water but the flue dirt in the gases caused so much trouble by clogging up the spaces in the heaters that they were taken out. A motor-driven feed pump was used at first but had to be taken out as it was under capacity due to the boiler making more steam than had been counted on, also the excessive heat was bad for the motor. This pump was replaced by a duplex steam pump of double capacity.

The present feed-water system carries out the idea of waste heat utilization to the utmost extent and is as follows: The warm waste cooling water from the bulkhead and port pipes of the furnaces is supplied to the Dyblie gas valve hood instead of cold water. After being heated still further by the gas valve, it flows from a semi-circular trough to a small tank, the water level of which regulates the amount supplied to the Dyblie valve hood by a float valve according to the requirements of the boilers. From the small tanks the water flows through a pipe under the floor to the feed pump, but, before entering, the exhaust steam from the feed pump is discharged into the water. These three additions of heat are sufficient to raise the feed water from 35 deg. to 200 deg., equivalent to 90 boiler hp. The boilers are now making about 825 boiler hp., which is equal to 1900 tons of coal a month obtained from waste heat.

## CRANE FOR HANDLING ASPHALT

### An Interesting Use of a Special Bucket Type for Unloading Ocean Steamers

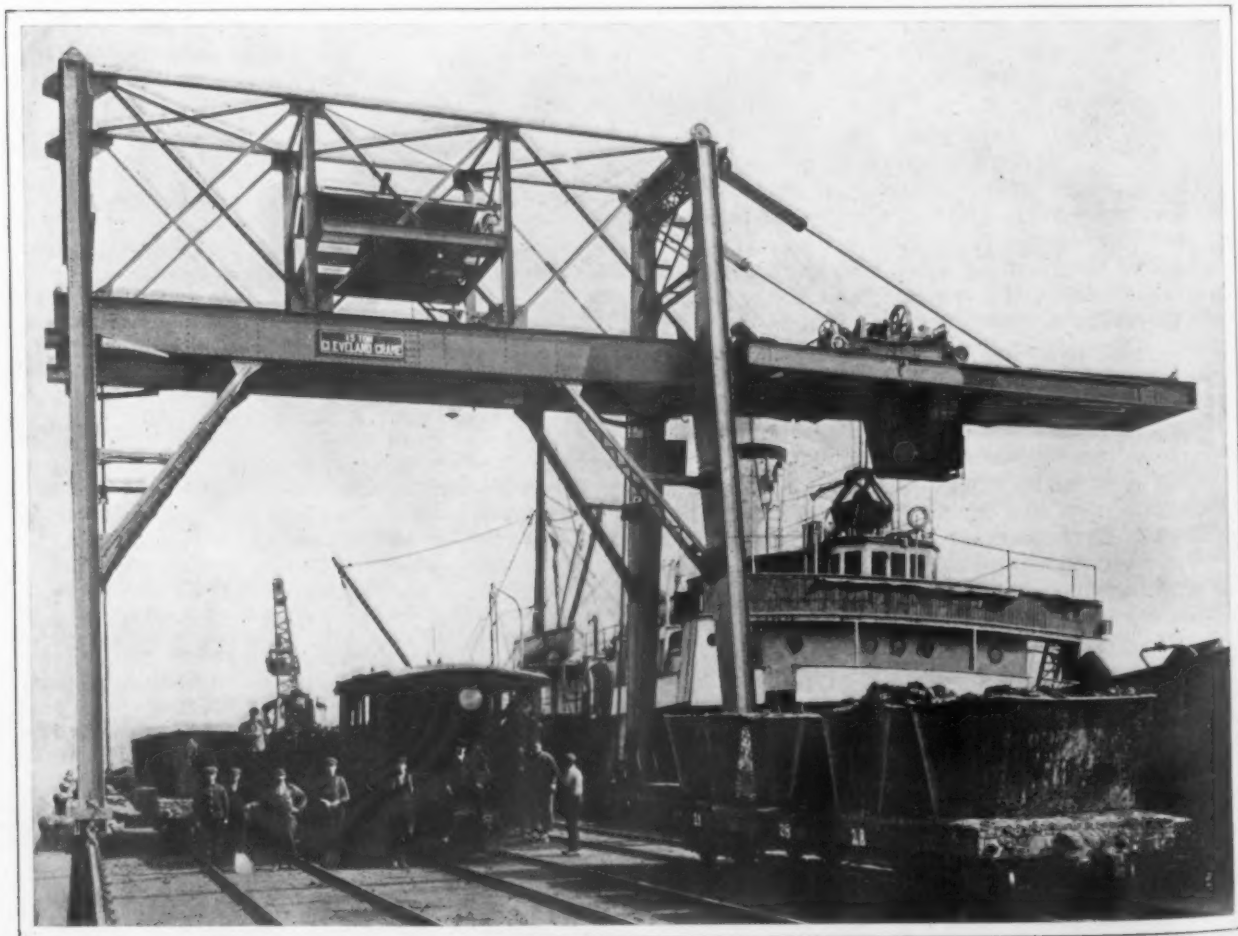
New uses for crane equipment are frequently being found, and to supply the needs of the broadening field crane manufacturers are quick to meet conditions by designing special cranes suitable for the handling work that is required. A special type of bucket handling gantry crane has recently been built by the Cleveland Crane & Engineering Company, Wickliffe, Ohio, for the Barber Asphalt Paving Company, and has been installed at that company's plant at Maurer, N. J. This crane is designed for unloading asphalt from ocean-going vessels. This material is unusually hard to handle because of its sticky character, being somewhat similar to very thick tar. Generally it has been removed from the holds of boats by a derrick and drop bucket, but this method of handling required considerable hand labor and was not economical. Locomotive cranes have also been used for handling the unloading buckets, but these were found to be unsatisfactory for this class of work.

The special gantry type of crane that has been installed is doing the work so satisfactorily that it is stated that the company expects shortly to add additional cranes of the same type. The crane consists of a main frame and cantilever extension that can be raised, forming a handling bridge, and a man trolley that operates a  $1\frac{1}{2}$ -cu. yd. clamshell bucket. The crane moves back and forth under its own power on a runway extending the length of the dock, approximately 300 ft. It has a span of 40 ft. from center to center of rail and the cantilever extension is 40 ft. long. The main span and

cantilever provide a trolley travel of 72 ft. The distance from the runway rails to the trolley rail is 32 ft. and the total height of the crane is 46 ft. The wheel base is  $24\frac{1}{2}$  ft., each leg being mounted on two 24-in. wheels. As the dock extends out into the water, berthing space is provided on both sides and the crane is so designed that a duplicate cantilever extension can be attached on the rear end of the machine, thus permitting the unloading of boats from both sides of the dock. The crane spans three standard-gauge railroad tracks. Asphalt is dumped from the bucket into sheet metal tanks, three of which having a capacity of about 15 tons each are placed on a flat car. When the tanks are loaded the cars are hauled to the plant and the tanks are unloaded by being raised and dumped with an overhead traveling crane.

While the bucket has a capacity of 5 tons, the crane is built for a 10-ton pull with the trolley at the end of the cantilever, the additional power being provided because of the elastic pull required to detach a bucketful of the sticky material from the boat's cargo.

The crane is designed for complete control by the operator in the cab of the man trolley, in which the operating switches and levers are located. However, the owners have had the machine arranged so that the cantilever is raised and lowered from the loft above the girders in which the motor and drum for operating the boom are located. No friction clutches are used in the operating mechanism. The man trolley has two drums, one for the hoisting rope and the other for the closing rope, each drum being operated by an individual motor. Each drum is supplied with a heavy magnetic brake and dynamic brake control so that no clutches or mechanical control are required. Similar dynamic brake control is used in connection with the mech-

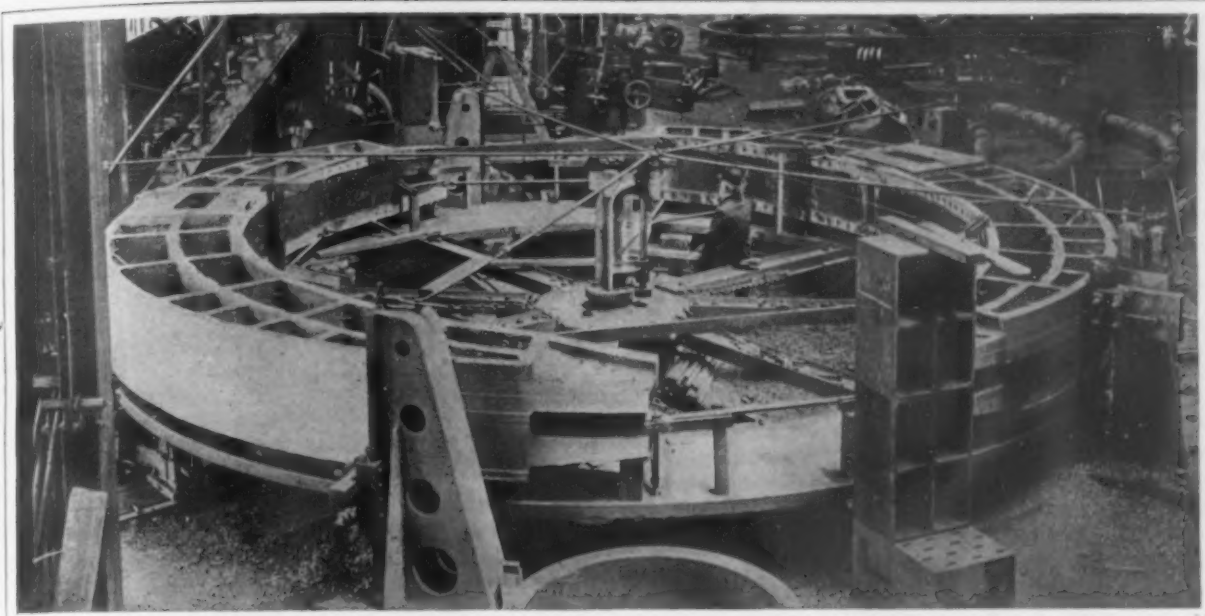


A Special Type of Bucket Handling Gantry Crane Used for Unloading Asphalt from Vessels

anism for raising and lowering the cantilever, this being raised and lowered with cables. Two pairs of gears connect the boom hoisting drum with the motor. The raising of the cantilever is required when the crane is moved from a position over one hatchway to another. The crane is equipped with an automatic locking device to hold the boom in a vertical position when the machine is traveling

### A 40-ft. Boring and Turning Mill

Because of a rush of orders for metal mixers during the year 1913 the Pennsylvania Engineering Works, New Castle, Pa., decided to build and has put in operation at its plant a large boring mill for turning the rockers on these mixers. This mill, while comparatively simple in construction, can turn



A 40-Ft. Boring and Turning Mill Turning a Rocker Band, 30 Ft. in Diameter, for a Metal Mixer

along its runway. Angle-iron conductors fastened inside the girders are provided to carry the electric current from the runway conductors to the operator's cab and from the cab to the bridge and boom hoist motors. The time required for the bucket to make a complete trip is 3 min., two-thirds of this time being required for closing the bucket.

The motor equipment includes a 10-hp. motor for travel along the runway, two 30-hp. motors, one for closing the bucket and both for hoisting, one 10-hp. motor for racking the trolley and one 5-hp. motor for raising the cantilever. All the motors are of the mill type, designed for hard service and driven by direct current at 220 volts.

The crane is of very heavy construction, having strength sufficient for a 20-ton machine. The legs are of the box section type, made of two channels and two plates bolted together. The girders are of the box type of plate and angle construction. They are braced with knee braces of the latticed angle type.

Various safety appliances have been provided for the protection of employees. All the gears are protected with sheet metal guards and cases. The bridge trucks have a safety clamping device of the tongue type to prevent the bridge moving except when moved by the operator. All wires are inclosed in metal conduits. Foot walks, hand rails and ladders are provided as an additional means of safety and to make all parts accessible. As a protection to the machine there is an overload safety switch, which prevents injury should the bucket become caught on the edge of the hatchway.

The Elyria Iron & Steel Company, Elyria, Ohio, has purchased a plant and several acres of ground at Guelph, Ontario, in which it will manufacture steel products for the Canadian trade. It is the plan to ship semi-finished products from Elyria to the Canadian plant for finishing as soon as the latter is fitted up for the purposes for which it is to be used.

accurately to 40 ft. in diameter. The table itself is 30 ft. in diameter. The driving rack has a pitch diameter of about 25 ft., permitting five heavy cuts to be taken at one time on steel castings.

The whole machine is centered and steadied by a large pintle at the center, on which, for the turning operations, the automatic feed is mounted. This mill is designed particularly to turn or bore from 24 to 40 ft., other mills in its shops being capable of taking care of work of smaller size. The illustration shows the mill turning a rocker band 30 ft. in diameter for the Pittsburgh Steel Company's 600-ton metal mixer. Each one of the two rocker castings weighed 59,500 lb., and the face of the rocker was 30 in. wide. These rockers are eccentric, being turned to an outside diameter of 30 ft. and bored to 30 ft., inside diameter. The boring operation was accomplished by supporting the rockers on parallels outside of the mill and attaching the cutting tools to the mill table.

### Hot Sea Water and Wrought-Iron Pipe

The engineer of the Columbia Baths at Atlantic City, N. J., recently gave some information on the experience at those baths with wrought-iron pipe for conducting sea water, both hot and cold. A suction line to draw water from the ocean was installed 14 years ago. Byers wrought-iron pipe was used for the line, and in all that time gave no trouble whatever. Last summer the baths were greatly enlarged and it was necessary to replace the suction line with pipe of a much larger diameter. The original lengths of pipe were found to be in prime condition, having lost very little from corrosion, despite the fact that they were exposed to both inside and outside action. This pipe was so good that it was laid again in another part of the work for another purpose. The heating system, of Byers 2-in. pipe, galvanized, was also laid 14 years ago, and when the alterations to the plant last summer caused it to be taken up it was found to be in almost perfect condition, and was replaced with no repairs.

## THE WORCESTER CONVENTIONS

### The Programmes of the National Metal Trades and Machine Tool Builders' Associations

The programmes of the conventions of the National Metal Trades Association and the National Machine Tool Builders' Association, to be held at the Hotel Bancroft, Worcester, Mass., the week beginning Monday, April 20, are practically completed, and promise a series of interesting occasions, alternating between the business and the social sides.

The National Metal Trades Association will open activities with a meeting of the executive committee of the Administrative Council at 9 o'clock Monday morning, and at 11 o'clock the secretaries of the 15 branches will leave for an automobile trip to see the great dam of the Wachusett reservoir at Clinton and to lunch at Sterling Inn. The Administrative Council will meet in the afternoon and the alumni dinner will be in the evening. At 6.30 o'clock a reception and lunch will be given the members at the Worcester Trades School, following visits to important manufacturing plants of the city.

The presidents and secretaries of the branches will meet with the Administrative Council Tuesday morning, and the first association gathering will follow a buffet luncheon. After addresses by President W. A. Layman and Mayor George M. Wright of Worcester, the reports of President Layman, Treasurer F. C. Cadwell, Commissioner John D. Hibbard and Secretary H. D. Sayre will be made, together with the report of Fred A. Geier, chairman of the Committee on Industrial Training, which will be followed by a general discussion, and the report of J. H. Schwacke, chairman of the Publicity Committee. The Worcester Branch will give a reception and dinner dance in the evening.

The Wednesday morning session will open with the report of the Committee on Prevention of Industrial Accidents, of which W. H. Van Dervoort is chairman, and a discussion will follow led by William H. Doolittle, safety inspector for the National Metal Trades Association, and M. W. Alexander of the General Electric Company, chairman of the Committee on Safety and Sanitation of the National Founders Association. A discussion on the subject of efficiency will be led by George D. Babcock, H. H. Franklin Mfg. Company, Syracuse, N. Y. Prof. Dexter Kimball, Cornell University, will present a paper on "Production in Its Relation to Efficiency."

A paper on "Legislation" by Walter Gordon Meritt, representing the Anti-Boycott Association, will open the afternoon session and will be followed by a discussion of the question led by B. B. Tuttle, Cincinnati, Ohio. The election of officers will follow. During the convention Albertus H. Baldwin, chief of the national Bureau of Foreign and Domestic Commerce, will explain the work of his bureau.

The annual dinner will be held in the evening. Among the speakers will be Prof. J. Lawrence Laughlin, University of Chicago, and W. H. P. Faunce, president of Brown University.

#### THE MACHINE TOOL BUILDERS

The National Machine Tool Builders' Association, many members of which will have been in attendance at the sessions of the Metal Trades Association, will hold the opening session of its semi-annual meeting Thursday morning, which will be given up to reports of committees and routine business and to an address on "What Features of Electric Motors Can Be Standardized for Machine Tools," by Charles Fair, General Electric Company, and an address by J. C. Spence, superintendent of

the Norton Grinding Company, Worcester, on "How Can We Induce Ourselves and Our Men to Earn More Money?" Thursday afternoon and Friday morning will be devoted to meetings of the committees representing the various branches of the machine tool industry. Friday afternoon will conclude the convention. Committees will then report, and R. G. Williams, safety engineer of the Norton Company, Worcester, will give an illustrated address on "Safety as Applied to the Use of Grinding Wheels." Thursday evening the association will be entertained at dinner by the Worcester machine tool builders.

The ladies who may visit Worcester with the members of the two associations should have a very pleasant time, for elaborate preparations have been made for their entertainment.

## DOUBLE CRANK CUTTING PRESS

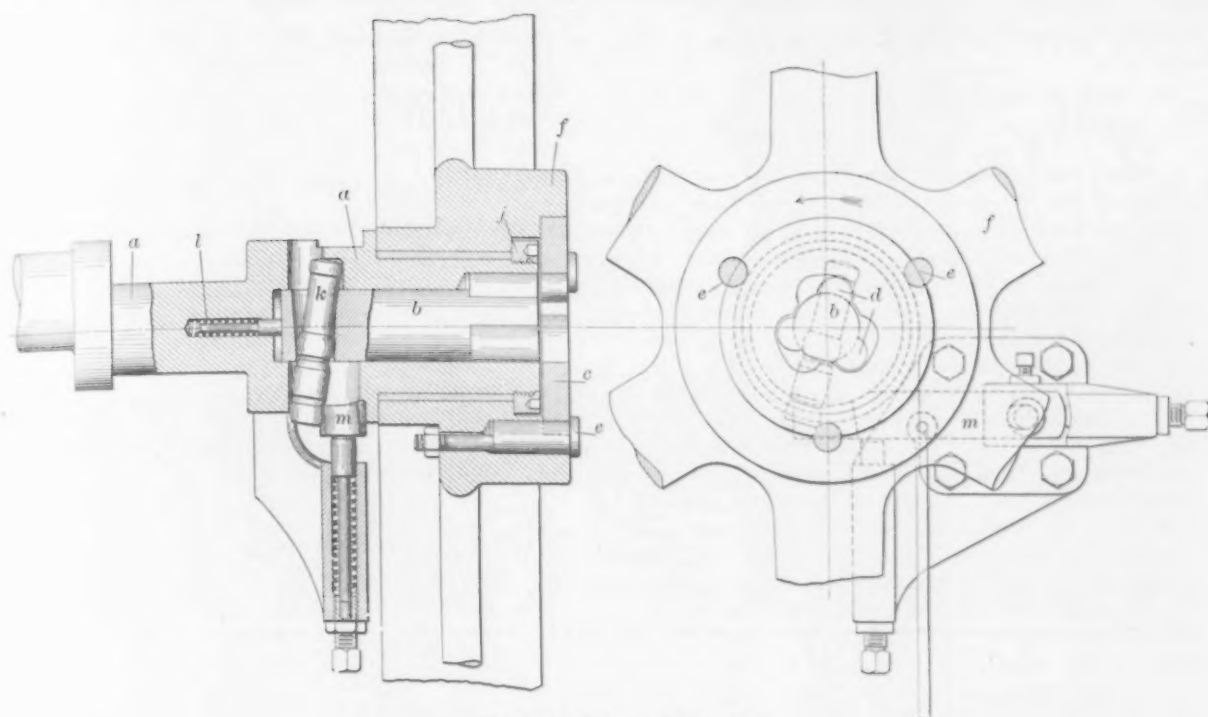
### New Line to Suit Varying Conditions—Details of the Special Clutch Used

A new line of double crank cutting and stamping presses has been recently put on the market by the Max Ams Machine Company, Mt. Vernon, N. Y. In designing the machines an effort was made to produce presses that would suit the varied conditions occurring in practice, and it is emphasized that every detail as to the adaptability and proper distribution of material has been carefully worked out.

The presses are made in four sizes for exerting pressures of 15, 25, 50 and 100 tons, and each size has a number of different widths between the up-rights, the narrowest space being 24 in. and the widest 120 in. The design of the frames is symmetrical and there are openings through the sides, thus enabling long pieces to be fed through. The beds and the flanges on the slides are made in a number of different shapes, wide, narrow or round, as the requirements of each particular case may dictate. The distances between the bed and the slide are great, and the latter have long, adjustable guides. Parallel adjustment is provided for the pitmans.



One of a New Line of Double Crank Cutting and Stamping Presses.



Details of the Clutch Used

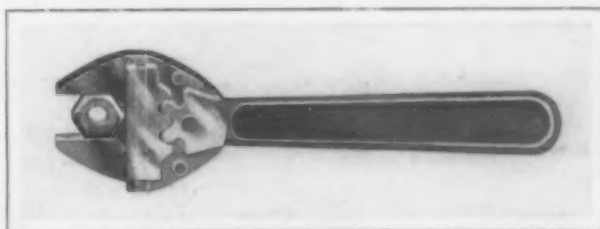
The clutch is of a new positive design which the company plans to apply to nearly all of its presses. It is a departure from the patented clutches now in general use and possesses a number of novel features. The operation is accomplished in the customary way. The wedge *m*, which is connected with a hand lever or treadle, is pulled down and causes the spring *l* to move the hardened key or locking pin *b*, which has two or more prongs *d* and is located in the center of the shaft, into the notched hardened plate *c*. This operation connects the flywheel *f* to the shaft *a*. The hardened plate *c* has an opening in the center with two or more notches and is fastened to the flywheel by two or more bolts *e*. The flywheel *f* runs continuously upon the shaft *a*, being held in place by the nut *j*. After the shaft has made a revolution the wedge *m* acts upon the pin lever *k*, withdrawing the locking pin *b* and disconnecting the flywheel from the shaft.

It is pointed out that the clutch possesses the distinctive features of durability, simplicity and easy access. The flywheel is gripped centrally on two or more points, an arrangement which is relied upon to avoid irregular wear of the bearings. The striking surfaces, which are large and on the outer end of the shaft, are located as near as possible to the center of the shaft, which tends to reduce the velocity to a minimum and avoid a hard blow. It is further emphasized that as all the striking surfaces are always in full view, it is possible to examine them at a glance, and the parts subject to wear can be removed quickly and easily, without interfering with the flywheel or other parts. If it is desired at any time to remove the locking pin *c* this can be done by pressing it against the spring *l*, so that the pin lever *k* can be pushed out sideways and the locking pin thus left free. When one side of the steel plate *c*, which has the striking surfaces, becomes worn, it can be removed and reversed by taking out the bolts *e*. With a view to avoiding clicking, the wedge *m* is cushioned and to prevent the press from making a second stroke unless the wedge is pulled clear down it is furnished with a shoulder. This arrangement does away with the necessity of having a tight brake. A separate bracket is used for mounting the wedge and the springs used are of the adjustable compression type. The flywheel is

bronze bushed and can be turned backwards to facilitate setting of the dies and releasing punches when they are stuck. If desired a positive stop attachment can be applied to compel the operator to depress the treadle for each stroke.

### Automatic Self-Adjusting Wrench

An automatic and self-adjusting wrench, the ratchet principle of which is apparent from the accompanying illustration, is being manufactured by the Cochran Pipe Wrench Mfg. Company, 7800 Woodlawn avenue, Chicago. The manner in which one end of the wrench handle is formed as a pinion,

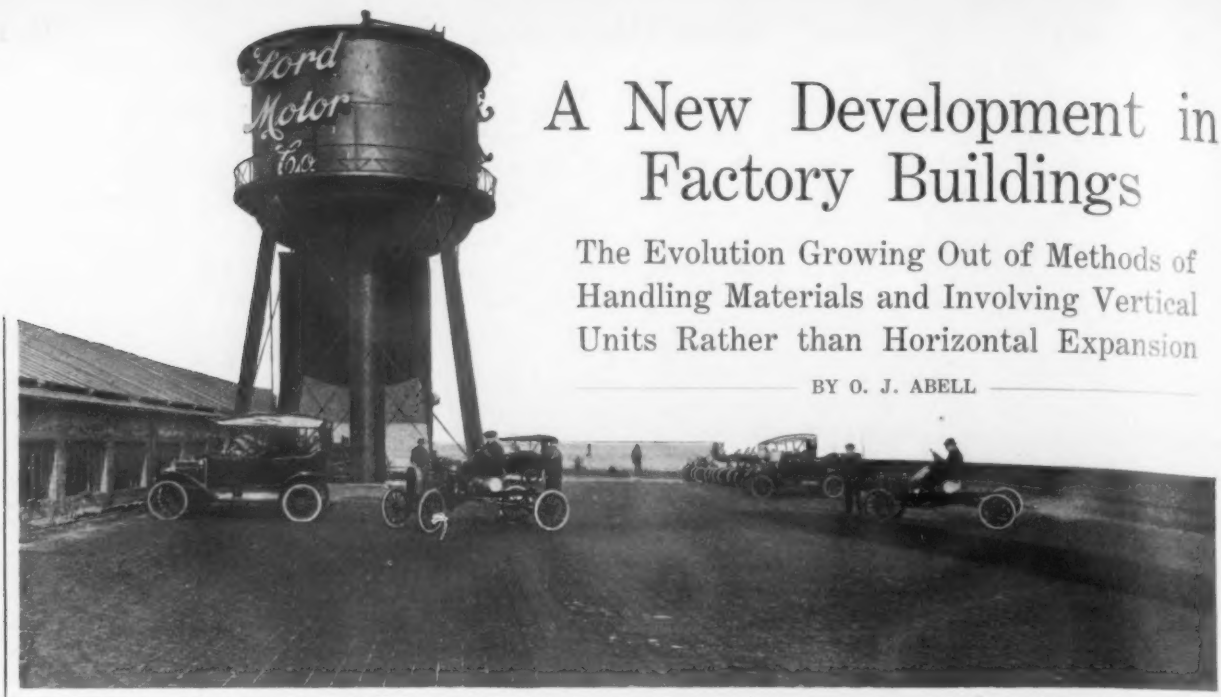


An Automatic and Self-Adjusting Drop Forged Ratchet Wrench

the handle being pivoted and acting as a lever and the pinion driving a rack which is integral with the adjustable jaws, is such that the act of pulling the handle tightens the wrench on the nut and when tight turns the nut. Pulling the handle in the opposite direction releases the wrench. To loosen the nut the wrench only requires to be turned over and applied in similar manner.

The wrench is simple in construction, consisting of but three pieces, and is made from drop forgings of ample strength. It can be furnished with an adjustment adaptable to sizes from  $\frac{1}{4}$  to  $\frac{3}{4}$  in.

The manufacture of wrought pipe is to be shown by motion pictures at a joint dinner of the Providence Association of Mechanical Engineers and the American Society of Mechanical Engineers at Masonic Hall, Providence, R. I., April 29, by Harold T. Miller, National Tube Company, Pittsburgh.



## A New Development in Factory Buildings

The Evolution Growing Out of Methods of Handling Materials and Involving Vertical Units Rather than Horizontal Expansion

BY O. J. ABELL

Utilizing the roof of the Ford Service Building as a car testing floor

**A**N interesting evolution in the general design of a building suitable for warehouse purposes, for machine shop and assembling operations, is presented in the new buildings which the Ford Motor Company is adding to its plant at Detroit and elsewhere, as compared with those previously erected. The change has been influenced by the problem of handling materials. To unload raw material and distribute it within the plant and to load finished materials from the plant into the cars, is now recognized as of paramount importance. It is conceived to be a mistake to have single story buildings with wide continuous floor areas, across which it is a handicap to transport materials, whatever the means available may be for reaching the common medium of transportation between floors or between buildings. The general type of building now adopted may be built any number of stories in height and in duplicate units. These

units may be of any length, but are restricted in width, and are joined one with the other by crane-ways or shipping courts. This crane-way is an open well from loading track to roof, with a crane runway immediately under the roof girders, allowing only the necessary clearance. These crane-ways become the common arteries of transportation for all of the buildings and the connecting link between floors. The use of elevators is intended to be obviated except in auxiliary capacity.

One of the typical units of this type of building has been erected by this company in Chicago, to serve as an assembling and service station. The idea of the shipping court is presented in an illustration of this Chicago plant. An essential feature of this crane-way are landing platforms at each floor. While these platforms are arranged one directly above the other, it will be noted that the lowest platform is the longest, the one directly



Ground Floor of the Ford Service Building. The deep concrete beam and column construction supporting the loading track on the floor above is shown at the left. Wiring conduits are carried up in the columns—note push buttons. Single built tungsten incandescents with D'Olier reflectors furnish artificial light

above shorter, and so to the top platform, which is the shortest. Thus the upper platforms do not interfere with the landing of material by the crane on any of the lower platforms.

It is apparent that this arrangement of the central craneway is a form and extension of that shop design quite commonly used where a crane spans the high center monitor bay, the floor space of which is used for assembling and the heaviest machine work, while in the side bay, both on the main floor and in the galleries the lighter operations are performed. The criticism of this type of building, where there are only a main floor and a gallery, is that such a building is too expensive and involves too great a waste of overhead space for the purpose it serves. The same criticism does not apply in the design of the present building.

Some of the details of the design of the building are unusually interesting from the standpoint of reinforced concrete construction. This six-story structure is 164 x 232 ft. in plan. The enclosed shipping court is 35 ft. wide and 205 ft. long, with equal floor space units on either side. In the court at the roof line are reinforced concrete girders carrying the crane rails. The shipping and unloading platform at second floor level is served by a depressed switch track. The court is covered by a monitor skylight of reinforced concrete construction.

The first story 20 ft. high is being used for show rooms and garage space, the second floor as the shipping floor and the upper stories as assembling floors. The upper stories have a height of 13 ft. The floors are served by two large freight elevators with platforms 9 ft. x 16 ft., in addition to the traveling crane in the shipping court. The floors are of the Akme system of girderless floor construction with flat slabs 11 in. thick, designed for a live load of 150 lb. per square foot. These slabs are carried on reinforced concrete spiral-hooped columns of octagonal section with flaring column heads of the same shape, capped by a 7 ft. square plate 9 in. thick. The columns are spliced at the floor levels by lapping the bars from the column below with those above, thus to transmit the stress in the upper bars to the lower bars by bond. The interior columns are carried on isolated spread foundations of reinforced concrete, while the exterior columns along the street sides

of the building are carried on a continuous footing.

The typical panels are 25 ft. x 28 ft. which are unusual spans for flat slab construction. The reinforcement for the floor slabs consists of rectangular belts of square twisted bars extending in two directions only. The main belts of bars between columns are bent so as to be in the top of the slab over the column heads and the immediate vicinity, and in the bottom of the slab between the column capitals. The bars in the portion of the slab enclosed between the main belts are placed parallel and perpendicular to them and similarly bent, thus reinforcing the upper portion of the slab over the middle portion of the main belts in a transverse direction. The bars were bent previous to placing and held rigidly in place by supporting bars and blocks, thus insuring their proper position in the finished slab.

To provide for future extension the floor slabs at the south end of the building are carried out 4 ft. beyond the column centers. They are provided with a continuous steel angle shelf to carry the future slab. Short stub bars were placed through holes in the angles at 6 in. centers to tie the future slab to the present construction.

All stairs in the building are of reinforced concrete, designed as slabs with the risers cast integral therewith. These stairs were concreted at the same time



General View of the Unusual Craneway in the Ford Service Building. The enclosing of all floors with glass partitions has now been completed. The crane runway is immediately under the roof girders. The crane is equipped with special rigging for handling bodies, chassis and parts in multiple

as the floors and are provided with metal nosings.

The railroad switch track enters the building at the south end at a level about 4 ft. below the second floor and extends to within one bay of the north end. The track is carried on a reinforced concrete slab 21 in. thick, hung from reinforced concrete girders below the second floor, or 28 ft. span, 7 ft. 3 in. deep. These girders are 16 in. wide and spaced 16 ft. 6 in. centers, one being carried on brackets on the main building columns while the other line is supported on auxiliary columns. The track structure being placed to one side of the court bay, a considerable clear space is left along the other side. This is used as a shipping and loading platform, from which materials are picked up and transferred to the various floors by the overhead traveling crane.

The landing platforms project out 8 ft. 6 in. beyond the center of the court-way columns. They are of the same thickness as the main floor slabs;

viz., 11 in., and as cantilever slabs, are reinforced in a similar manner, without deepened supporting girders as is more commonly adopted in such construction. The load carrying capacity of these balconies was very forcibly demonstrated by the application of a test load of 55 tons of cement to one of the fourth floor balconies, 42 ft. long. Under this load of 310 lb. per square foot (over twice the designing load) or 2600 lb. per linear foot of balcony, a deflection of only  $5/32$  in. was recorded 24 hours after full load was applied. It should be noted that in making this test no load was applied on the interior slab beyond the column centers to care for the uplift caused by the load on the balconies; in other words, the test was made as severe as possible.

The court is inclosed along the face of columns with steel sash and sliding steel doors glazed with wire glass at the balconies. The north end bay forms a connection between the two portions of the building separated by the craneway. This bay, 28 ft. x 35 ft., consists of a panel slab 11 in. thick inclosed by deepened slabs between columns with a thickness of 20 in. This is no doubt the largest panel ever built, employing this type of construction.

The traveling bridge crane, with a capacity of 5 tons, a weight of 9 tons and a span of 34 ft., is carried on reinforced concrete girders and is of 28 ft. span, as stated. These girders are carried on and bracketed to the tops of the reinforced concrete

columns and designed as fully continuous beams. The crane rails rest on  $3/4$ -in. steel plates on 2-ft. centers anchored to the concrete and the rails are clamped down by means of American Bridge Company rail clamps, pattern No. A-24. The girders are designed to allow future extension readily at the south end of the building.

In the new buildings at Detroit an interesting heating plant is installed. The indirect hot air system is used. The heating coils and fans are located on the roofs of the building and the air pipes are brought down through the hollow centers of the concrete columns, the discharge openings for the several floors being located at the base of the columns. In cold weather this system is used for supplying hot air and in the summer as a ventilating plant for distributing cooled and moist air. In the Chicago building a hot water heating system has been adopted. One of the special features of this system is the carrying of the water to a height of 250 ft. in the building. The expansion tank also is equipped with special devices intended to create a greater than atmospheric pressure on the system, so that the water will not boil at 212 deg. Automatic devices are provided so that the pressure in the expansion tank is adjusted as the pressure in the system increases with the superheating of the water.

A 70,000-gal. steel water tank carried on a steel tower 50 ft. above the roof is supported directly on four of the building columns at the roof level, these columns being designed to carry this extra load. This storage tank supplies the sprinkler system installed throughout the building. The main roof on one side of the monitor is covered with a promenade tile and is used as a testing floor for the assembling cars.

The building was built after the general designs of John Graham, supervising architect of the Ford Motor Company, while the Condron Company, Chicago, designed the reinforced concrete frame.

### The Staten Island Flexible Pipe Contract

The Westinghouse Machine Company, East Pittsburgh, Pa., has received a contract for the manufacture of 9800 ft. of 36-in. flexible-joint, cast-iron pipe, to be used in extending the New York City water supply to Staten Island. The pipe will form a siphon under the Narrows in connection with the water supply brought

from the Catskills. The siphon will extend from Seventy-ninth street and Shore road, Bay Ridge, Brooklyn, to the junction of Arrietta street and Stuyvesant place, Staten Island. The pipe will be laid in a trench in the bed of the Narrows, the dredging of which will be a difficult job, the specifications prescribing that not more than 1000 ft. of the channel may be obstructed at any time.

Experiments made by the city of New York with 36-in. flexible-



View Showing Test of One of the Craneway Landing Platforms with a Load of about 310 lb. to the Foot

joint pipes have proved that such joints are watertight before, during and after deflection under water pressure up to 2000 lb. per sq. in., and give every promise of being acceptably tight joints without the necessity of submarine calking, which has heretofore been made an extra item in contracts. The features of the joint are the flexible bell turned on the interior, reinforced by a band of wrought iron, set, shrunk, or pressed on; a spigot having a tap grooved for the retention of the lead; a narrow turned collar to bear on the bell in order to insure uniform leaded space to carry the weight.

The specifications provide that the average laying length of the pipe is to be at least 12 ft. The thickness of the metal is to be not less than 0.1 in. less than standard thickness, except for spaces not exceeding 8 in. in length in any direction, and variations from the standard thickness of 0.03 in. in excess of the allowance above given will be permitted. No diameter of any pipe at any place in its length shall be greater or less than the standard diameter by more than  $3/16$  in. The pipe is to be coated inside and outside with a bitumastic solution or bitumastic enamel. Before the first coat has been applied, each pipe shall be subjected to a hydrostatic pressure of 350 lb. per sq. in., and to a hammer test under this pressure. The angle of maximum deflection of the joint is to be 10 deg. in 50 ft. The pipe, which will aggregate about 4100 tons, including 300 tons of hub and spigot pipe, will be cast at the Trafford City foundry of the Westinghouse Company, while the machine work, of which there is a considerable quantity, will be done at its East Pittsburgh works.

## RECENT FOUNDRY PRACTICE

### Rumbling vs. Sand Blasting—Cupola Linings and Molding Sands

At the monthly meeting of the Newark Foundrymen's Association, Newark, N. J., April 1, a paper on foundry practice was read by J. S. Hibbs, assistant general manager J. W. Paxson Company, Philadelphia. Out of his more than 30 years' experience with foundry work, Mr. Hibbs related much of interest to foundrymen. First of all, he was of the opinion that many natural deposits in New Jersey such as clays, sands and gravels, were more appreciated outside of the State than within it. The importance of the molding sands found in New Jersey was indicated by the location in and near the State of many large cast iron pipe plants.

After dwelling at some length on sand, Mr. Hibbs took up facings, their sources, methods of preparation, etc. There had been cases, he said, where fault had been found that blacking would not mix with water; that it seemed to be oily. He attributed this to the fact that finely ground materials seldom do combine readily with water, and to eliminate the difficulty he recommended the use of a mechanical mixer. The blacking should be placed in the receptacle of the mixer first and the water then poured in.

#### MICA SCHIST FOR CUPOLA LININGS

The speaker went into the subject of cupola linings, laying special stress on the use of mica schist, which is a natural laminated silicate, not subject to expansion or contraction. It was first used by Bessemer steel makers for lining converters, but later proved to have great merit for use in cupolas and lime kilns. It can be shipped as cheaply as rough stone and the only objection made to it is that it costs more to lay, but this is offset by its lasting three times as long as fire brick. It should be laid edgewise, like books on a shelf, otherwise it will spall. The interstices should be filled with the smaller pieces, some of which may be ground, to make a solid wall. Laid in this manner it offers great resistance to abrasion and eventually its surface becomes glazed and smooth. He did not recommend the use of mica schist in cupolas under 35 in.

In speaking of molding, Mr. Hibbs said that no other shop work is so little appreciated. He pointed out that the machinist is guided to the last detail by his drawings and that other departments had similar facilities, whereas in the foundry an analytical mind, foresight and individual judgment are essential to uniform good results. He believed the chemist should be subject to the cupola foreman. Good chemists are easy to secure, he said, inasmuch as the colleges are turning them out in great numbers. He touched on other phases of foundry practice, including the location of tuyeres and cleaning of castings. At the conclusion of his address Mr. Hibbs explained a number of lantern slides showing the digging, handling and transportation of sand, also views of equipment in a number of large foundries.

#### RUMBLING FOUND CHEAPER THAN SAND-BLASTING

In the discussion, C. G. De Laval, general manager Henry R. Worthington, Harrison, N. J., raised the question of the cost of cleaning castings by sand blasting, his experience being that rumbling cost much less than the sand-blast. He said that since using a sand-blast machine imported from England

several years ago he had worn out four sand-blast outfits. He got satisfactory results in rumbling a large locomotive cylinder and was considering the use of 12-ft. barrels, some 8-ft. barrels already being in operation.

H. P. Macdonald, Snead & Co. Iron Works, Jersey City, N. J., called attention to trouble that had been encountered with one batch of Jersey sand, lumps having formed on the castings. An examination disclosed small black nodules in the sand. Mr. Hibbs said that the trouble probably was due to particles of iron in the sand. Answering a question by W. F. Prince, of Henry R. Worthington, Mr. Hibbs said that the so-called vegetable bond in Lumberton sand was a misnomer, as it really was an admixture of marl. Mr. Prince said he believed that sand should be bought on analysis, as iron is purchased, and then a good bonding sand would be assured. He had conducted some tests, giving various sands an equal amount of water, and in casting a block 6x6x6-in. he had found that one sand stood 30 heats, another 20 heats, while another "went to pieces" after 7 heats. Mr. Hibbs did not concur in the sand analysis proposal and remarked that he once had a customer who wanted him to guarantee the amount of moisture in sand. He believed that such a practical demonstration as Mr. Prince had conducted was a sufficient index to the qualities of sand.

Mr. Hibbs pointed out that foundries in Albany, N. Y., and Lynn and Fitchburg, Mass., and the Dominion Iron & Steel Company used New Jersey sand in large quantities, although the sources of other sands were nearer at hand. Mr. De Laval was of the opinion that the prejudice of molders was responsible for some of the long-distance shipments, as they preferred sand with which they were familiar. Personally he believed there was but little difference.

The thanks of the association were voted to Mr. Hibbs, A. E. Barlow, the secretary, pronouncing the paper to be one of the most valuable the organization had heard. The meeting was then addressed by a representative of the New Jersey State Chamber of Commerce who appealed for the co-operation of the foundrymen in the work of that organization.

At the business meeting which followed the addresses, President G. Hannay, Oscar Barnett Foundry Company, Irvington, presiding, the following were nominated for officers and members of the executive committee, to be voted on at the May meeting:

President—H. P. Macdonald, Snead & Co. Iron Works.  
Vice-president—James Flockhart, Maher & Flockhart.  
Secretary—J. S. Kinne, Riverside Steel Casting Company.  
Treasurer—John Campbell, Maher & Flockhart.  
Executive Committee—James Flockhart, G. Hannay, A. E. Barlow, Denis O'Brien, A. P. Smith Mfg. Company, and Louis Sacks.

The usual dinner preceded the meeting.

The Massillon Rolling Mill Company, Massillon, Ohio, has increased its capital stock from \$1,000,000 to \$3,500,000, to provide for the building of an open-hearth steel plant and rolling-mill extensions, mention of which was made recently. One-half of the stock issued is to be common stock and the remainder preferred. Three open-hearth furnaces and a blooming mill will be provided. The steel plant will have an annual capacity of about 100,000 tons, and the company expects to have a surplus of 25,000 to 30,000 tons a year to sell to the outside trade. The capacity of the rolling mill will be increased to 60,000 tons of sheets per year. The company expects to have its new plant ready for operation by December.

# A German Dry Gas Cleaning Process

The New Method of the Beth Patents as  
Applied to Blast Furnaces in Germany—  
Results of Tests at the Halberger Huette

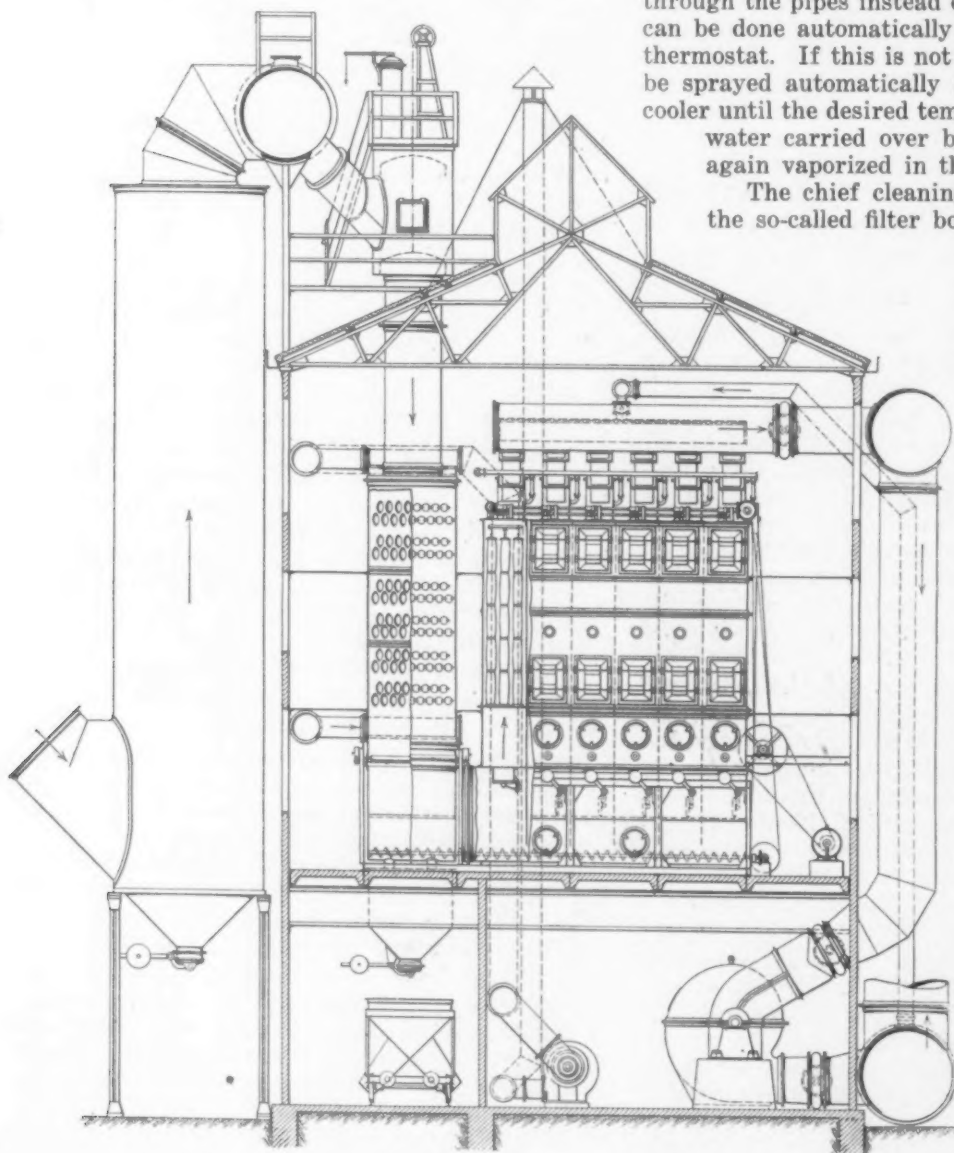
Prof. E. Mayer, of Aachen, is well-known to technical men because of his good work on the heat economy and reactions of the open-hearth process. He contributes a paper to *Stahl und Eisen* for February 5, 1914, regarding the comparatively new dry method of cleaning blast-furnace gas operated under the W. F. L. Beth patents. The plant at which the tests were made is the Halberger Hütte in Brebach, the arrangement being shown in the illustrations. In general it consists of a pre-cooler, a pre-heater, the filter boxes and the fan. It is built for a normal capacity of 10,600 ft. per min. measured at 0 deg. C. and 760 mm. pressure. Photographs of plants are given in the original paper, one at the Röchling Eisen und Stahlwerke, Völklingen, giving 74,200 cu. ft. of cleaned gas per min., and another

other times it occasionally rises to 200 deg. C. It first passes through the pre-cooler, being cooled a certain specified amount to 60 to 70 deg. C., and then it goes to the pre-heater. In this way the gas is put in condition so that it does not injure the fibres of the filtering bags by being too hot, and on the other hand it is so far overheated that during the cleaning process it remains above the dew point. In this way disturbance of the process by water being deposited in the pores of the filtering bags is prevented with certainty. Waste gases from the stoves are used in the preheaters, being drawn through pipes by a fan. In exceptional cases where the waste gases exceed 200 deg. C. in temperature and the pre-cooler cannot sufficiently cool the gases, the pre-heater can be used for cooling by drawing air through the pipes instead of hot waste gases. This can be done automatically by means of an electric thermostat. If this is not sufficient then water can be sprayed automatically into the gas in the pre-cooler until the desired temperature is reached. The water carried over by the gas must then be again vaporized in the pre-heater.

The chief cleaning is done by filtering in the so-called filter boxes. They are made up

of several divisions, in each of which hang vertically a number of the filter bags, open at the lower end. They are made of a specially prepared cloth. The gas passes through these bags from the inside and from below, the dust remaining on the inside. Some falls of itself into two hoppers at the bottom of the filter boxes and is removed by electrically operated screws to dust boxes, from which it is taken at intervals as found necessary. The greater part of the dust must, however, be removed from the bags by a special process. For this purpose the current of gas is reversed for a short time, in any particular division of the filter boxes, by means of a reversing valve. Clean gas taken from behind the fan and therefore at high pressure passes through the bags from the outside to the low-

er part of the filter boxes. At the same time the bags are shaken by suitable mechanism and thorough cleaning is the result. This gas used for cleaning is heated by a Beth patented process, so as to avoid clogging up and dirtying the bags with sep-



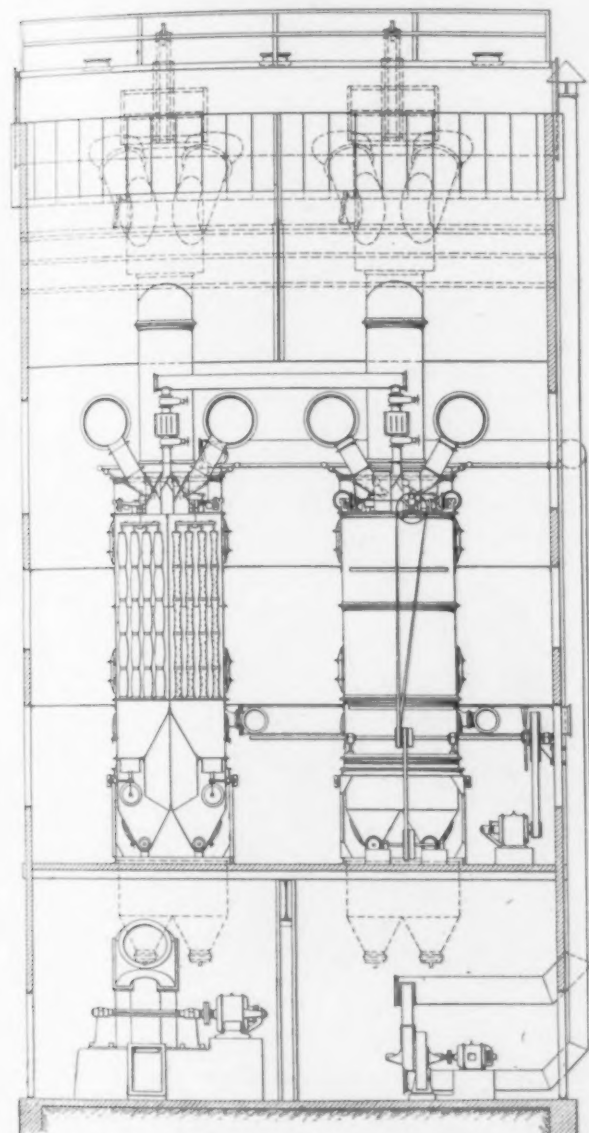
Cross Section of Dry Halberg-Beth Gas Cleaning Plant.

at the Burbacher Hütte under construction, which is to give 141,340 cu. ft. per min.

The raw dirty gas comes to the plant at greatly varying temperatures. Sometimes it is at only 50 deg. C. and is then saturated with moisture; at

arated moisture. In the illustrations two divisions are shown at the left, one in normal operation, while the other is represented as being cleaned.

The results of the test are given in the table. This test was carried out under the personal super-



Longitudinal Section of Dry Halberg-Beth Gas Cleaning Plant

vision of Professor Mayer for the Blast Furnace Committee of the Verein deutscher Eisenhüttenleute. It extended over several days, the greatest care being taken to get accurate results.

*Results of the Test*

Amount of cleaned gas furnished per minute:	
At 62 deg. C. and 758 mm.	16,833 cu. ft.
At 6 deg. C. and 760 mm.	13,713 cu. ft.
Dust contained in raw gas (0 deg. C. and 760 mm.) per cu. ft.	1.82 gr.
Dust in cleaned gas, just in front of gas engines (0 deg. C., 760 mm.)	0.00019 gr.
Static pressure in the raw gas main	1.32 oz.
Static pressure in the clean gas main	4.44 oz.
Temperature, raw gas main	67.8 deg. C.
Temperature, clean gas main	62.0 deg. C.
Moisture contained in clean gas (22 deg. C. and 748 mm.) per cu. ft.	56.37 gr.
Total power, measured at the three motor shafts	66.8 hp.
Power used by fan to give 3.12 extra oz. pressure	22.4 hp.
Power for the cleaning process alone	44.4 hp.
Power required per 1000 cu. ft. clean gas (at 6 deg. C. and 760 mm. pressure) without increase of pressure	3.24 hp.
Power required for 1000 cu. ft. clean gas, per 2.275 oz. increased pressure (100 mm. H <sub>2</sub> O)	1.19 hp.

The test was made in April, 1912, the filter bags having already been in service for eight months. Between the fan and the gas engines there are two cooling towers, behind the fan the dust contents of the gas were 0.0052 gr. per cu. ft. The results show that the plant was being burdened 30 per cent.

over its normal capacity. The dew point of the gas containing 56.37 gr. moisture per cu. ft. is about 54 deg. C.; it leaves the fan at 69 deg. C., which is 15 deg. C. excess temperature.

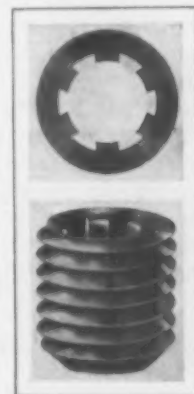
The remainder of the paper is taken up with a discussion of the effect of the moisture contents, which is high compared with that of gas cleaned and cooled by wet processes. The feeling is often expressed that such gas is not so suitable for combustion in the stoves. He believes that the heat required to dissociate the moisture is completely recovered, for with any decrease in flame temperature the water forms again, giving off the same heat previously taken for its dissociation. He also believes that higher flame temperatures will be reached because of the far better mixing of gas and air that can be obtained in the burners, due to using cleaned gas free from dust.

G. B. W.

## A New Type of Patent Safety Set Screw

At the first International Exposition of Safety and Sanitation recently held in New York City, the Bristol Company, Waterbury, Conn., received a silver medal in connection with its exhibit of safety set screws. The display included a new and improved line of Bristol safety set screws, manufactured under the Goodwin patent. The special feature of the design is the use of six dovetailed slots inside the hollow heads of these screws and a corresponding number of flutes on the outside of the special wrenches used with them. The advantage

claimed for this dovetailed design is that when the screws are set up hard with the special wrench, the screw is given a true rotary motion without the usual tendency to expand and crack the hollow head. The angles of the surfaces of the slots are such that the wrench has a tendency to contract or compress the head of the screw. For this reason it is pointed out that the screws are well adapted for use where it is necessary to take them out and put them back frequently, or where they are set up and loosened, one particular case being service in lathe dogs which are frequently adjusted. In making the screws a special heat treating process is employed which gives the screws a glass hardness on the outside and renders them extremely tough on the inside. It is stated that in actual tests samples have been found to be 100 per cent. stronger than the old hexagon style. The screws are manufactured in a number of sizes, ranging in diameter from 1/4 to 1 in. and from 5/16 to 1 1/4 in. in length.

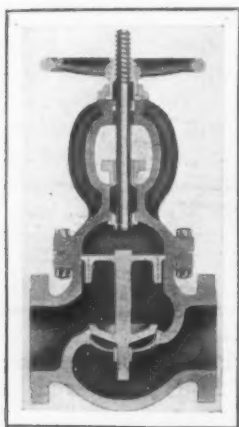


Two Views of a Recently Designed Safety Set Screw Showing the Dove-tailed Flutes

The Wambold Mfg. Company, 3009-3031 Lisbon avenue, Milwaukee, Wis., operating a brass foundry, has filed schedules of assets and liabilities under the involuntary petition in bankruptcy filed by creditors on March 10. The liabilities are given at \$12,594.73. Secured claims amount to \$6,078.06; unsecured, \$3,661.05; wages, \$855.63; accommodation paper, \$2,000. The assets, amounting to \$50,051.61, are distributed as follows: Stock in trade, \$3,760.50; machinery, tools, etc., \$27,454.97; debts due on open accounts, \$13,650.14. H. E. Wambold, manager of the company, filed a voluntary petition in bankruptcy coincident with the filing of schedules by the company on April 3 giving his liabilities at \$8,629.66 and assets at \$18,738.74.

### A Cushioned Non-Return Stop Valve

The Nelson Valve Company, Chestnut Hill, Philadelphia, Pa., has brought out a cushioned non-return stop valve. It is constructed to operate automatically like an ordinary check valve and for use as a stop valve. There is an internal dashpot, having the full area of the valve opening, which acts to cushion the effect of opening and closing the valve.



A Cushioned Non-Return Stop Valve Which Can be Operated Automatically Like a Check Valve or as an Ordinary Stop Valve.

The dashpot is always at the same temperature as the other working parts, a fact which is relied upon to equalize the contraction and expansion of all the parts and eliminate binding of the piston. It is made separate from the body and bonnet castings to secure alignment with the piston. The piston is made the same depth as the dashpot so that it will travel the entire distance in normal operation, and thus the formation of a shoulder which causes sticking is avoided. The piston and the disk are made in one solid piece of bronze. The latter has a lip below the finished seating surface to give an

easy flow of steam and also take the wear.

When it is desired to use the valve as a non-return valve, the handwheel is opened as with an ordinary stop valve. This allows the disk, which is a part of the piston, to operate automatically in the dashpot with slight changes of pressure. When used as a stop valve the handwheel is screwed down in the ordinary way. The handwheel is stationary so that the valve may be operated with small headroom. In installing the valves care should be taken to place them so that the pressure is always under the disk with the stem vertical, so they can then be packed when open and under pressure.

### A New Half Round Taper Pin Reamer

A half round taper pin reamer has been placed on the market by the Cleveland Twist Drill Company, Cleveland, Ohio. It is designed to take the place of the ordinary fluted taper pin tool. The advantages claimed for it as compared to the fluted tool are that it cannot become clogged with chips, one-half of the space in the hole being allowed for chips, danger of loss through breakage and chipping is eliminated and less skill is required in its operation. At the same time it is pointed out that it will do as good work as the fluted taper pin reamer and that with it the mechanic can increase his production. While it is expected that the reamer will be



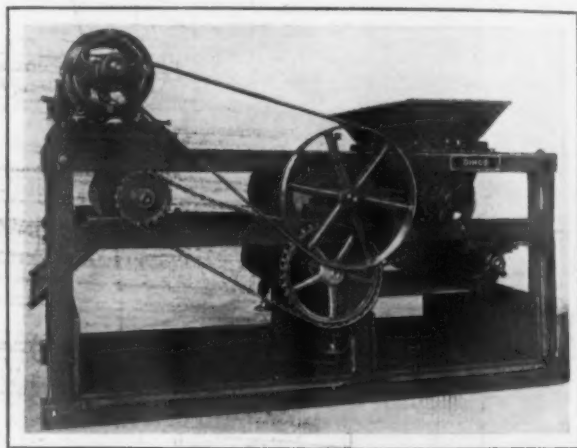
A Taper Pin Reamer of the Half Round Type Which Has Recently Been Developed to Take the Place of One Having the Ordinary Flutes

used largely in automobile work, it is stated that it can be used for any class of work. It is made in sizes from No. 0 to No. 14, with over-all lengths up to 18½ in. and ranging in diameter at the small end from 0.135 to 1.25 in.

### A Magnetic Separator for Machine Shops

To free the large quantities of iron and steel turnings produced in machine shops from the small percentage of brass, babbitt, non-ferrous metals and other metals so that they can be remelted, the Dings Electro-Magnetic Separator Company, Milwaukee, Wis., has brought out a new machine. It lifts and agitates the metal as it passes through the magnetic field to shake out and separate effectively every particle of free non-magnetic material.

The turnings which are to be treated are shoveled into the bulk hopper and are fed evenly upon an apron conveyor which carries them into the magnetic zone. At this point the iron is picked up and carried by an endless belt to the rear, where it is discharged through the chute. The brass and other non-magnetic material is delivered upon the separator floor in the second compartment. The machine illustrated is equipped with a direct motor drive and is rated as capable of treating a carload of turnings in 10 hr. By the use of a separator a considerable increase in the value of the turnings is of course secured. The increase due to the elimination of the non-magnetic metal is figured at \$20 per car,



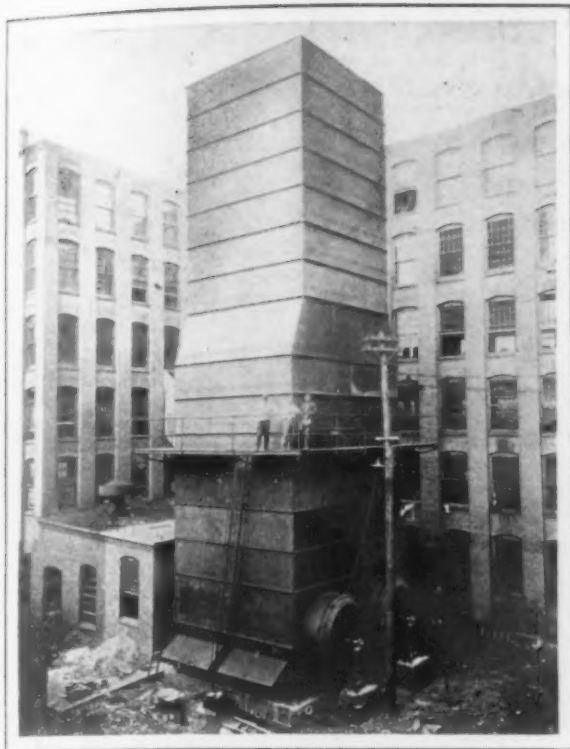
A New Magnetic Separator Designed Especially for Use in Machine Shops to Free Iron and Steel Turnings From Brass, Babbitt and Other Non-Magnetic Metals

and the value of the brass recovered is \$40, assuming that this constitutes 1 per cent. of the turnings and sells at 10 cents per lb. Against these savings there is an estimated charge for the cost of treatment, including labor, power, etc., of \$10, thus leaving a net profit of \$50 per car.

### Forced and Natural Draft Cooling Tower

The Wheeler Condenser & Engineering Company, Carteret, N. J., has recently built a large twin Wheeler-Barnard forced draft cooling tower. It has a capacity of 132,000 gal. per hr., cooled from 100 deg. F. to 80 deg. and is installed at the New Britain, Conn., plant of the American Hardware Company. The unit consists of two towers arranged side by side. Each tower is 137 in. wide and 18¼ ft. long, and the pair are erected over a reservoir which also serves as a foundation. The chimney is 18¼ ft. square, and the height from the base of the tower to the top of the stack is 70 ft. Four 108-in. fans are employed to supply the forced draft used in combination with the natural one.

The tower proper terminates just above the platform, on which the men are shown standing in the accompanying engraving. The steel plate work above this is used as a stack to convey the vapors



A Combination Forced and Natural Draft Design Cooling Tower for Factory Use Having a Capacity of 132,000 Gal. per Hr.

above the roof of the building and to provide the natural draft for operation in cold weather. The tower is arranged with special air inlets, which are

## Hydraulic Scrap Metal Bundling Press

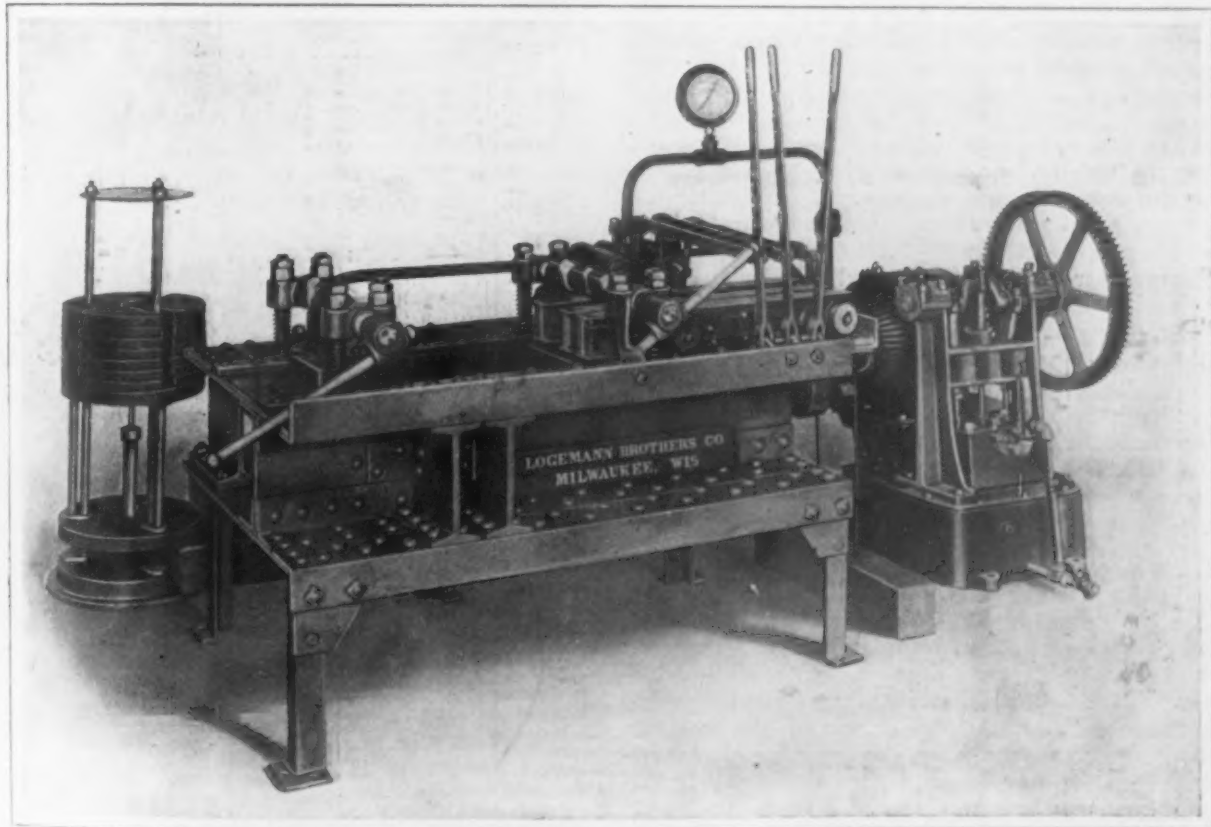
For bundling scrap brass, copper, aluminum, wire, sheet steel, etc., into small compact bundles for remelting, the Logemann Brothers Company, Milwaukee, Wis., is building a line of presses operated by hydraulic power. Three sizes are built, the smallest being the one illustrated, while the largest is designed for stamping plants and mills.

The compression is made by a double system of hydraulic rams. When the press is filled with scrap the cover is closed and locked and the movement of one lever compresses the scrap into a flat shape by one ram, followed by the movement of a second one operating at right angles which finishes the bundle and produces a densely compressed mass. The press cover is automatically locked by hydraulic power, the entire equipment being controlled by the builder's operating valve.

The following table gives the principal dimensions and specifications of the three machines:

Size of cabbage, in...	4 x 4 x 11	5 x 5 x 13	6 x 10 x 16
Minimum weight of cabbage, lb.....	20	35	100
Maximum weight of cabbage, lb.....	25	50	125
Size of charging box..	11 x 12 x 20	13 x 16 x 42	16 x 22 x 60
Size of opening for filling, in. ....	12 x 20	16 x 42	22 x 60
Floor space, ft.....	7 x 9	8 x 14	10 x 13
Capacity, tons .....	3	5	10
Weight, lb. ....	3,700	9,000	17,000

The equipment furnished with the presses includes a triplex high-pressure hydraulic pump. The equipment furnished with the two smaller presses includes a hydraulic accumulator. These two



A Press for Bundling Scrap Brass, Copper, Aluminum, Wire, Etc., at the Rate of 3 Tons per Day

opened when the fans are not in use and the stack supplies the draft. These inlets consist of counter-weighted doors, which, when opened, as shown in the engraving, give a large opening for the air to come in.

presses are mounted on legs, the filling opening in the middle size being 25 in. from the floor. The largest size of press can be either set on the floor or sunk in a pit, so that the charging point is level with the floor.

# The Recovery of Tungsten from Steel Scale

## Details of a Process for the Profitable Reclamation of Valuable Alloying Elements in the Electric Furnace

BY R. J. WYSOR\*

The rapidly increasing use of high speed and other tungsten alloy steels has caused a proportionate increase in the scale produced. It is well known that with the heat treatment necessary for handling high speed steel, there is a comparatively heavy loss due to oxidation in heating furnaces, forging and rolling practice. The successful utilization of this scale has been a source of concern to manufacturers of crucible steel for a long time. There are obvious objections to the recovery of the valuable contained metals by the blast furnace, open-hearth or crucible process. Apparently this scale has not appealed very strongly as a raw material to manufacturers using the soda fusion method in the production of ferrotungsten or tungsten metal.

About a year ago I experimented to determine the practicability of recovering the values from high speed steel scale direct in an electric furnace. Although only one complete test was made, the results were so encouraging, and in many respects conclusive, that I have decided to publish them for the benefit of others who may be interested. Since making this test, I have learned that at least one producer of high speed steel scale has used some of it in conjunction with tungsten ore in the manufacture of ferrotungsten by an electric furnace process. However, I have found no published description of an electric furnace process applied to the reduction of this scale.

### CONDITIONS OF THE EXPERIMENT

The test was conducted in a Heroult three-phase, 60-cycle, 400-kw, arc furnace of 4500 lb. capacity. The furnace had made a number of heats after the preceding relining. Only the small amount of patching in the bottom or sides of the furnace customary after each heat preceded this test. About 1000 lb. of high speed hammer scale was used. Its composition was approximately as follows:

	Per Cent.
Iron .....	58.10
Manganese .....	0.20
Phosphorus .....	0.01
Sulphur .....	0.14
Silicon .....	0.40
Chromium .....	3.10
Tungsten .....	11.20
Vanadium .....	0.60
Oxygen .....	26.30

It was my plan to melt down a sufficient amount of low phosphorus pig iron to produce a bath for conducting the current, and to aid in reducing the scale by virtue of its carbon content. The scale was then to be added in successive small charges, the first without coke dust, later additions with about half the theoretical amount of admixed coke dust required for reduction, or more if the reaction did not become too violent. The regular charge of burnt lime for slag formation was anticipated. No low phosphorus iron was available at the time and ordinary foundry iron was substituted.

### RECORD OF THE HEAT

The furnace having been tapped as clean as possible and being hot after the preceding heat, the actual course of the experimental heat may be traced in the following log:

\*Chief chemist, Bethlehem Steel Company, South Bethlehem, Pa.

Time	Charge	Weight in lb.	Notes
9.30 a.m.	{ Fdy. iron borings. Burnt lime .....	1000 60	
	Scale .....	60	
10.25 a.m.	{ Scale .....	200	{ The iron turnings were not entirely melted when this addition was made.
	Coke dust .....	20	
11.10 a.m.	{ Scale .....	100	
	Coke dust .....	10	
11.25 a.m.	{ Scale .....	115	{ Reaction active around electrodes, but outer edge seemed cold.
	Coke dust .....	20	
11.45 a.m.	Fdy. iron borings	135	
12.25 p.m.	{ Coke dust .....	10	
	50% ferrosilicon.	40	
12.30 p.m.	Sand .....	20	{ Up to this time the slag seemed too stiff. The addition of ferrosilicon and sand thinned it very appreciably and caused a vigorous reaction.
12.40 p.m.	{ Scale .....	200	
	Coke dust .....	40	
12.50 p.m.			Metal test No. 1 obtained.
12.55 p.m.	Sand .....	25	
1.25 p.m.	{ Sand .....	15	
	Ferrosilicon .....	20	
1.28 p.m.			{ Slag test A obtained. Bath well melted. Metal test No. 2.
1.30 p.m.	Coke dust .....	5	
1.40 p.m.			
1.45 p.m.	{ Scale .....	85	
	Coke dust .....	15	
1.55 p.m.	{ Scale .....	80	
	Coke dust .....	20	
2.10 p.m.	{ Scale .....	80	
	Coke dust .....	15	
2.10 p.m.			Metal test No. 3.
2.20 p.m.	{ Scale .....	80	{ Slight rabbling occasionally. Bath working well. Reaction not violent.
	Coke dust .....	15	
2.35 p.m.	{ Scale .....	80	
	Coke dust .....	15	
2.45 p.m.	Coke dust .....	20	
2.50 p.m.	Sand .....	30	
3.05 p.m.	Sand .....	10	{ Magnesite seemed to be coming up from bottom and causing slag to become stiff. Hence sand additions.
3.20 p.m.			Slag test B.
3.30 p.m.			Metal test No. 4, slag test C.
			{ The furnace was working well and bath and slag were in good condition at this time, all scale apparently having been reduced. The plant was due to close at 4 p.m. (Saturday), and although more scale was available, it was decided to tap the heat. The final lime addition was made to insure sulphur removal.
3.50 p.m.			Metal test No. 5.
			Heat tapped. The metal was hot, but quiet, indicating thorough deoxidation. It was cast in chill molds. A small amount of metal remained in the furnace and was removed after the furnace was cold.
4.00 p.m.			
Current consumed:			
9.30 a.m. to 4.10 p.m.		1980 kw hr.	
Average voltage .....		90	

### REDUCTION OF METALS

Total metal charged and tapped:

	Gross weight, lb.	Approx. metallic weight, lb.
Cast iron .....	1,135	1,067
Ferrosilicon .....	60	30
Steel scale .....	1,088	796
Total .....	2,283	1,893

The actual weight of metal tapped from the furnace, with allowance for its non-metallic elements, checked the theoretical weight within reasonably close limits.

#### Analyses of metal samples:

	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6*
Carbon .....	1.68	1.77	1.94	2.06	1.88	2.37
Manganese .....	0.29	.....	.....	0.35	.....	0.40
Phosphorus .....	0.324	.....	0.306	.....	0.258	0.270
Sulphur .....	0.015	0.012	0.011	0.017	0.022	0.013
Silicon .....	1.07	.....	.....	1.32	.....	1.10
Chromium .....	0.67	0.78	0.94	1.03	1.20	1.41
Tungsten .....	3.98	4.44	4.83	6.61	6.32	6.32
Vanadium .....	0.16	0.17	0.20	0.21	0.23	0.28
Oxygen .....	.....	.....	.....	.....	.....	0.009

\*Ladle test

It was my desire to tap the metal with about 0.75 per cent. carbon content. However, both the melter and myself were deceived by the fracture test, as the finished product does not classify well with any regular grade of steel. It now appears that the bath could have been further decarbonized readily by the addition of scale without coke dust nearer the end of the heat. The finished metal, cast in chill molds, when broken exhibited a bright, clean fracture similar to washed metal.

#### SLAG ANALYSES

The slag at the end of the heat was "white" and calcium carbide appeared to be forming freely around the electrodes, indicating thorough deoxidation. Following are proximate analyses of slag samples:

	Sample A, per cent.	Sample B, per cent.	Sample C, per cent.	Sample D,* per cent.
Silica .....	29.85	23.66	31.24	30.65
Iron .....	10.28	5.90	4.28	2.34
Manganese .....	0.59	.....	.....	0.39
Lime .....	23.30	.....	25.20	29.95
Magnesia .....	28.44	.....	31.17	31.71
Phosphorus .....	0.022	0.052	.....	0.015
Sulphur .....	0.450	.....	.....	0.58
Chromium .....	1.38	.....	.....	0.10
Tungsten .....	1.99	0.48	.....	None
Vanadium .....	0.45	.....	.....	0.09

\*Ladle test

It will be noted that practically all of the tungsten, most of the iron and about 80 per cent. of the chromium and vanadium have been reduced into the form of clean, new metal. Tungsten appears to have been reduced most rapidly.

#### PHOSPHORUS AND SULPHUR IN FINISHED METAL

The use of high phosphorus foundry iron, of course, accounts for the high phosphorus content, 0.270 per cent., of the finished metal. It would not have been advisable to tap off an oxidizing dephosphorizing slag because of the loss of valuable metals from the scale. In regular practice trouble with phosphorus can be obviated readily by using a relatively small amount of low phosphorus iron, or steel scrap, either molten, or by direct melting in the electric furnace. Also it would be better to use petroleum coke rather than ordinary coke breeze. The phosphorus content of high speed and other tungsten steel scale will normally always be low, and hence high phosphorus percentages in the finished metal will not result from the scale.

Removal of sulphur is entirely satisfactory even when it is fairly high in the scale, as it was in the present case. When steel is soaked for some time in direct fired heating furnaces, using coal or sulphur bearing oil as fuel, the resulting scale must carry a notable percentage of sulphur.

#### GROSS VALUE OF HIGH SPEED STEEL SCALE

Using as a basis, high speed steel scale of average composition and average market values for the contained valuable metals, and assuming that it is converted into a low carbon ferroalloy, we obtain the following approximate value of the metal produced, the conversion practice being based in round figures on the results of the foregoing experiment:

	Per- centage in scale	Value in metal per lb.	Percent- age of conver- sion	Metal value in scale, per lb., cents
Tungsten .....	11.5	\$0.70	100	8.05
Chromium .....	3.0	0.20	80	0.48
Vanadium .....	0.6	2.50	80	1.20
Total .....	.....	.....	.....	9.73

It will be understood, of course, that the above figure merely represents the value of the metal which we may expect to be reduced by reduction from the scale.

#### COST OF CONVERSION

No attempt will be made to estimate the actual cost of reducing alloy steel scale. All who are familiar with electric furnace practice will realize, however, that if the general lines of this experimental heat are followed, and with improvements which will be worked out, the total cost of conversion will be only a small part of the metal values recovered. The cost of electric power at about 0.4 or 0.5c per kw hr is inconsiderable. It seems probable that in the Girod furnace with water cooled bottom electrode or electrodes, repairs necessary to the hearth would be less than in the Heroult furnace. Compared with the experimental heat described, it is reasonable to anticipate that economies can be effected by:

1. Working larger charges.
2. Reducing the time of a heat.
3. Reducing the ratio of cold pig iron, or steel scrap, or hot metal to the total scale charged.
4. The use of higher grade petroleum coke in preference to ordinary coke breeze is also to be recommended.

The wear on the furnace bottom during this test was somewhat greater than with regular heats. However, it was patched in the usual way and ordinary heats were continued. Furnace bottoms should be patched more heavily than usual with magnesite, or preferably dolomite or a mixture of the two, before such a heat as has been described. No marked cutting action around the slag line was observed. Electrode loss was not determined but seemed not to be excessive.

#### CONCLUSIONS

1. There is a considerable and increasing tonnage of valuable high speed and other tungsten steel scale produced each year. A large percentage of it can be accumulated, chiefly in hammer shops, without much admixture of other scale or foreign material. Recovery of tungsten and other metal values from such material has been a difficult problem.

2. In the presence of a suitable reducing agent, practically the entire percentage of tungsten, chromium, vanadium and iron in steel scale may be recovered profitably in an electric furnace. This may be accomplished by making heats in which the greater part of the cold charge consists of the scale itself. In such cases the percentages of alloy metals in the steel produced should be rather similar to those in the original metal from which the scale resulted. Steel thus produced can be used in making new crucible heats, or in case alloy steel or ferroalloy heats with the same alloying metals are to be made direct in the electric furnace, additions of a few hundred pounds of scale may be made to each heat.

3. With the carbon in the bath under control by the aid of preliminary carbon determinations, it seems practicable that direct electric furnace heats of specified composition can be made by using alloy steel scale of known composition as the principal constituent of the charge.

ESTABLISHED 1855

# THE IRON AGE

Published Every Thursday by the DAVID WILLIAMS CO., 239 West Thirty-ninth Street, New York

W. H. Taylor, *Pres. and Treas.*

Charles G. Phillips, *Vice-Pres.*

Fritz J. Frank, *Secretary*

M. C. Robbins, *Gen. Mgr.*

BRANCH OFFICES—Chicago: Otis Building. Pittsburgh: Park Building. Boston: Equitable Building. Philadelphia: Real Estate Trust Building. Cleveland: New England Building. Cincinnati: Mercantile Library Building.

Subscription Price: United States and Mexico, \$5.00 per year; to Canada, \$7.50 per year, to other foreign countries, \$10.00 per year. Entered at the New York Post Office as Second-class Mail Matter.

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## The Steel Trade's Prospects

It is frequently the case in the steel trade that by as much as its prospects for the immediate future are poor, by so much are its prospects for the longer future very good, and this seems to be precisely the case at the present time. It is quite natural that at times there should be this antithesis. If the immediate outlook is poor, buyers refrain from taking hold, but meanwhile their requirements accumulate and eventually they must buy all the more freely on account of their having indulged in a period of waiting. Again, a prolonged slackness in trade damps the enthusiasm of manufacturers with respect to extensions and thus when a period of active demand develops the existing productive capacity is sometimes found to be insufficient.

It is noteworthy that during the past few weeks the expectations of the iron and steel trade—distributors and consumers of steel as well as producers—have become distinctly less favorable as to the condition of trade in the near future, while at the same time the conviction has grown that eventually the trade will pass into a period of pronounced prosperity. Some men of note have placed themselves on record with predictions of this nature.

Even the superficial indications furnish testimony to the fundamentally sound position of the steel trade. One of these is the ease with which a buying movement started about the beginning of January, when the season of the year was unpropitious and when there had not been a period of low prices continued for such a length of time as to prove by its own showing that prices were necessarily at bottom. In the retrospect one is indeed disposed to wonder why the steel market recovered at all in January, for the influences to which it responded were not of great force. Thus the market showed itself quite sensitive to favorable influences.

The steel industry to-day is in quite different position from that which it occupied when the depression of 1903-4 started. Then there was clearly an excess of capacity as compared with normal requirements. There had been large increases of capacity, and it could be observed that when in 1902 the mills had been fully engaged they were so engaged simply because business in general was very good. The next period of depression, which began toward the close of 1907, likewise found the steel industry in a very different position from that which it occupies to-day. In the retrospect, the great activity of 1906 and the major portion of 1907 was seen to have been attendant upon unusual business

expansion in all quarters, with very free buying by the railroads, quite likely altogether too free. To-day, on the other hand, one can look back upon the period from about the middle of 1912 to the middle of 1913, when the mills were fully employed, and observe that their full employment at that time was not in connection with any general business expansion. Capital in that period was relatively very timid, as compared with 1906. There were relatively few large projects, and the railroads were but in different buyers. They purchased cars in multiples of 1000, whereas in 1905 and 1906 they had purchased in multiples of 5000.

Thus, from the long range viewpoint, the steel making and finishing capacity of the country appears at the present moment to be in closer alignment with the ordinary consumptive needs of the country than has been the case in past periods of incomplete employment. It requires a much smaller draft upon the imagination to picture the steel mills of to-day brought again to a state of operating at capacity than would have been required at the beginning of 1904 or at the beginning of 1908.

A factor of great importance influencing the future of steel demand is the low level of prices at which steel can be made and sold with profit. Measured in the absolute terms of equipment required and mental and manual effort expended, steel can be produced much more cheaply than 10 or 15 years ago. Output per unit of equipment and per man employed has greatly increased. The steel industry to-day is paying much more in dollars, both for its supplies and for its labor, measuring labor in terms of actual effort expended, than it did 10 or 15 years ago. The wages per man have very considerably increased, while the services rendered, measured by effort expended, have decreased.

Thus it occurs that while in industry as a whole wages have increased and the cost of commodities has risen and in general there is a very high cost of living measured in dollars, the prices for which steel is currently sold are quite low. These prices are very much nearer the historic low level, in 1897 and 1898, at which only a very small tonnage was actually sold, than they are to the high prices of 1902-3 and 1905-6-7, at which very large tonnages were sold. Steel from the price standpoint is in a very favorable position. Money is sufficiently plentiful that buyers do not hesitate to pay for most commodities much higher prices than they used to pay, but these same buyers, or other buyers in similar financial circumstances, are offered steel at much lower prices than they used to pay on an

average. There is no bar, therefore, but rather a great incentive, to steel going into greater and greater use in the future in proportion to other commodities.

It is from these and other considerations that the conclusion is being commonly drawn to-day that eventually there will come a great period of prosperity in the steel industry. The only question seriously debated is how long a time must elapse before this period of prosperity shall begin.

### The Passing of Spiegeleisen

The marked decline in the consumption of spiegeleisen in the United States is a development of recent years accompanying the rapid increase in open hearth steel production at the expense of the Bessemer process. And in a good many cases where the Bessemer converter is still in use it is employed in the duplex process, which involves no recarburizing and deoxidizing by the addition of spiegeleisen in the vessel as in the straight Bessemer operation. Instead a ferromanganese addition is made in the ladle into which the metal is tapped from the basic open hearth furnace. The declining use of spiegeleisen is shown statistically in the table below. Not until 1909 did the domestic consumption of ferromanganese exceed that of spiegeleisen. There was not a wide difference between the two in that year or in the two years following; but in 1912 the preponderance of ferromanganese became pronounced. In the first year in the table, 1901, the use of spiegeleisen was more than three times that of ferromanganese. This was true also in 1903, and in no year before 1908 was the ratio less than 2 to 1. The figures are in gross tons:

	Spiegeleisen			Ferromanganese		
	Pro- duction	Imports	Approx. con- sump- tion	Pro- duction	Imports	Approx. con- sump- tion
1901	231,822	26,827	258,649	59,639	20,750	80,389
1906	244,980	103,267	348,247	55,520	84,359	139,879
1907	283,430	48,995	332,425	55,918	87,400	143,318
1908	111,376	4,579	115,955	40,642	44,624	85,266
1909	142,831	16,921	159,752	82,209	88,934	171,143
1910	153,055	25,383	178,438	71,376	114,278	185,654
1911	110,236	20,970	131,206	74,482	80,263	154,745
1912	96,346	1,015	97,361	125,378	99,137	224,515
1913	110,338	0*	.....	119,496	71,185*	.....

\*First six months.

The complete figures for the 1913 imports are not yet published, but at 71,185 tons of ferromanganese imported in the first half of the year, with no imports of spiegeleisen in that period, the ratio shown in the consumption of the two products in 1912 was probably repeated—that is, more than twice as much ferromanganese used as spiegeleisen. The figures for both years indicate how the positions of the two metals has been reversed by the remarkable ascendancy of the basic open hearth furnace.

### Keeping a Clean Shop

Some manufacturing plants are naturally tidy; the character of the product and the class of people employed tend to such a condition. A much greater number, also largely because of the product and the character of the employees, are untidy. The superintendent and his assistants must make constant effort if they wish to maintain cleanliness. A foundry is normally a dirty place, yet many foundries are not only orderly but at the same time clean, so far as any tendency to unsani-

tary conditions is concerned. In other foundries remains of lunches can be seen on the floor, even in the more open spaces, and other litter foreign to the materials used. The men apparently throw rubbish about without hesitation; no receptacle for it is provided. The same slovenliness is frequently observed in other classes of work. Especially is this the case where buildings are old and not well lighted outside of the areas of actual work.

Unless organized effort is made to prevent it, rubbish will accumulate. This means increased fire hazard and may involve an unhealthy atmosphere. The "sweet" shop, as the clean plant has been called, is really worth striving for. No one disputes today that efficiency depends to a material extent on hygienic environment. Insufficient lighting, inadequate ventilation, too high or too low a temperature, unnecessary noise and dirt, each has its influence. Workmen are giving preference to employment where conditions are good. New shops designed to furnish the best working places for employees are never delayed in building up an industrial organization. They draw from factories where things are not so pleasant.

It may be questioned if the operators of machine shops, foundries and other metal-working plants have made as great an advance in late years toward cleanness of yards and works interiors as has been seen at steel plants and rolling mills. In many cases the change at the latter has been almost a revolution. Not only has the attention given these matters reduced accidents and facilitated operations, but the reflex influence of the right sort upon the minds of workers in the steel industry has been beyond computation.

### Canada's Tariff Policy

That the Canadian Government proposes to continue to protect its manufacturing industries is indicated by recent advices from Ottawa. The Finance Minister announced in the course of the presentation of his budget to the Canadian Parliament this week that wire rods, which have heretofore been free of duty, will be made dutiable at a minimum of \$2.25 per ton on importations from Great Britain and \$3.50 on importations from all other countries, including the United States; also that duties would be more than doubled on structural steel shapes whenever the Government is satisfied that they can be made satisfactorily in Canada; also that duties on wrought pipe over 4 inches in diameter have been more than doubled. As the government has a good working majority in Parliament, a bill imposing the new duties will doubtless be passed in short order and they will go into effect speedily. No tiresome delay will be experienced there, as would be the case with this country if a measure revising tariff duties even slightly should be introduced in Congress at the request of the Administration.

Another interesting statement in connection with the tariff question was made by the same official. He announced that the Canadian Government had refused to accept the tender of reciprocity from the United States on wheat and flour. The Underwood tariff act contains a clause permitting the free importation of wheat and flour into the United States

from countries admitting such commodities from the United States free of duty. The refusal is stated to be based on the ground that the Canadian Government believes in protecting the interests of its farmers. Our Government protects the interests of its farmers at the expense of the manufacturers by placing wire products, horse shoes and cotton ties on the free list.

The action of the Canadian Government is not a subject of criticism on this side of the boundary. It has a perfect right to do what it believes to be desirable for the best interests of the country or for the benefit of any of its people. The steel manufacturers of Canada have for some time been complaining of the inadequacy of the Canadian tariff, and have been persistent in the demand that a protective duty be placed on wire rods and that duties on some other forms of manufactured products be increased. By the action just taken, the government shows that it is not obdurate in adhering to the tariff schedules which were adopted in 1907. It is especially interesting to note, however, that the example set by this country in heavily reducing duties has not been followed by Canada. We are admitting free of duty such Canadian iron and steel products as can be marketed here, but the Canadians do not accept these new conditions as pointing out the way in which they should direct their tariff policy. It would seem as if any expectation held on this side of the line that Canadian markets would be opened a little more widely to us through reciprocity has been completely dissipated. Whatever trade we are to enjoy with Canada hereafter will not be obtained under easier conditions.

### Canadian Duties Raised

Finance Minister White, in his annual budget speech before the Canadian House of Commons at Ottawa, April 6, announced an increase in import duties on certain steel products. The change affects all three tariff classifications, the "preferential," which applies on imports from Great Britain and most of the British colonies, the "intermediate" in the case of treaty countries, such as France, Belgium and Austria, and the "general" under which duties against the United States and Germany are levied.

Under the increase just announced, wire rods, which heretofore have been imported free, are made subject to a duty of \$2.25 per ton British preferential, and \$3.50 per ton in the intermediate and general schedules. The duty on wire, which is included in this schedule, will be refunded in case it is used for fencing purposes. Up to the present, structural steel weighing more than 35 lb. per yd. has paid \$2 on the preferential, \$2.75 on the intermediate and \$3 on the general schedules per ton. The increase provides that up to 120 lb. per yd. structural steel shall pay \$4.25 preferential, \$6 intermediate, and \$7 general whenever the government is satisfied that steel of this character can be made satisfactorily in Canada.

Present duties on tubing of iron or steel up to 4 in. in diameter, on which 20 per cent. is paid under British preferential, 30 per cent. in the intermediate, and 35 per cent. in the general schedules, will be continued but the same rates are to be imposed also on all tubing up to 10 in. in diameter, on which the present duties are 10, 12½ and 15 per cent. in the respective schedules.

The offer of the Underwood tariff, now in force

in the United States, for the free admission of Canadian wheat, was refused. The present American tariff gives free admission to the wheat and flour of any country that admits free of duty these articles from the United States. The Finance Minister announced that his government believed in protection for the farmer, and would therefore continue the Canadian duties in these schedules.

### HILL ORE LANDS IN 1913

#### Large Amounts of Ore Soon to Be Available for Shipping

The trustees of the Great Northern Ore Properties have just issued their report for the year ending December 31, 1913. The receipts for the year amounted to \$1,133,889.19, of which \$1,018,402 was dividends on stocks in the Leonard Mining Company and the North Star Iron Company. Dividend No. 9 was paid, amounting to \$750,000, and the disbursements for salaries and expenses were \$73,144. The excess of receipts over disbursements, \$310,745.04, was carried to undistributed income, the total of which on December 31 was \$3,763,798.60.

The statement of operations of the United States Steel Corporation under its Great Western Mining Company lease shows that the shipments in 1913 were 5,221,987 tons, having an average iron content of 59.62 per cent., and of 14,903 tons with an iron content under 49 per cent. In 1912 the Steel Corporation shipped 7,435,051 tons of an average iron content of 58.32 per cent. and in 1911 it shipped 5,344,078 tons of an average iron content of 58.2148 per cent. The average royalty on the shipments of 1913 was \$1.283936. In 1912 the average royalty was \$1.186650 and in 1911 it was \$0.945308. The freight rate of 80 cents was reduced to 60 cents at the close of 1911, but under the provisions of the lease the amount of any freight reduction is added to the royalty, which accounts for the high royalty figures for 1912 and 1913.

The estimated ore contents of Great Northern Iron Ore Properties are stated as follows:

	Tons
Lands owned in fee.....	105,624,071
Leaseholds of the first class.....	105,341,673
Leaseholds of the second class.....	103,119,045
	314,084,789
In mines covered by the "Old Leases"...	97,364,365
Total.....	411,449,154

An indeterminate portion of the 314,084,789 tons is washable ore; that is, ore associated with free silica which is susceptible of concentration by the washing process. The work of developing mines and lands surrendered by the Great Western Mining Company, March 1, 1912, has proceeded in the past year. At the Dunwoody mine, in Section 27-58-20 3,033,470 cu. yd. of stripping had been removed to December 31, 1913, or about 60 per cent. of the 5,000,000 cu. yd. contracted to be taken off. An additional 2,500,000 cu. yd. is to be contracted for, and when the total is removed about 8,000,000 tons of iron ore will be available for steam shovel mining.

At the Dean-Itasca mine, heretofore known as the Whiteside, ore will probably be produced in 1914. The present stripping contract is for 3,000,000 cu. yd. This, with the removal of an additional 1,250,000 cu. yd., will uncover about 5,500,000 tons of ore. At the Smith mine, 449,240 cu. yd. of material was removed, making available for steam shovel mining about 600,000 tons of iron ore.

On leaseholds of the first class an underlying royalty of 25 cents a ton is paid. On leaseholds of the second class the underlying royalty is the same as the royalty received, and there is an incidental advantage of 20 cents a ton in these leases due to the reduction in freight rate from 80 cents to 60 cents a ton.

## Foundrymen's Convention Preparations

A conference of the executive officers of the American Foundrymen's Association was held at the Hotel LaSalle, Chicago, April 4, at the call of President Howell. It was the first meeting of Secretary A. O. Backert with the officers, following his election to the executive board of the association. Vice-President Bull and H. B. Swan, of the Committee on Papers, were also in attendance. The purpose of the conference was to formulate more definitely the plans for the coming convention. In various ways the provisions for the meetings and the arrangement of the papers are to be modified so that the time of those in attendance at both the meetings and the exhibition will be conserved. By fortunate circumstance the local Chicago committee held a luncheon on that day, at which announcement was made of the choice of permanent officers and committeemen to cover the work of preparation for the convention in Chicago and the presence of the officers of the national association added materially to the pleasure of the occasion. The following are those chosen for the local committees:

President, H. O. Lange, Ferguson & Lange Foundry Company; secretary, David Evans, Chicago Steel Foundry Company; assistant secretary, H. L. Hanson, Chicago Steel Foundry Company; reception committee for American Foundrymen's Association, J. A. Galligan, Pickands, Brown & Co., chairman; reception committee for American Institute of Metals, E. P. Welles, Charles H. Besly & Co., chairman; entertainment committee, A. G. McKinley, Griffin Wheel Company, chairman; banquet committee, C. B. Carter, American Brake Shoe & Foundry Company, chairman; printing committee, A. O. Sonne, Rogers, Brown & Co., chairman.

## Philadelphia Founders and City Work

The purchase of machinery, castings, etc., by various departments of the city of Philadelphia from manufacturers outside the city and State, in competition with local manufacturers was discussed at the monthly meeting of the Philadelphia Foundrymen's Association held at the Hotel Walton, Wednesday evening, April 1. The matter was referred to a committee composed of W. K. Hathaway, H. W. Brown and A. A. Miller for investigation and report.

The paper of the evening was by Stuart Dean, Dean Brothers Steam Pump Works, Indianapolis, Ind., and was on "Making the Foundry Pay Dividends." The speaker favored splitting up foundry work into small units, each under a separate head, which would invite internal competition and result in increased and better output. A manager must surround himself with capable assistants and push them, checking their results by carefully kept statistics. For the most part the paper dealt with the subject on the lines followed by Mr. Dean in a series of articles for *The Iron Age*, and in a recent paper before the Pittsburgh Foundrymen's Association.

Williams & Freedman, dealers in iron and steel, Tenth street and Philadelphia & Reading Railroad, Harrisburg, Pa., have bought the Rockhill blast furnaces at Orbisonia, Pa., for the purpose of dismantling them. The work of wrecking will be started shortly, when the machinery will be offered for sale. These furnaces were built in 1875-6 and were active producers for many years. Their day of usefulness has passed, however, and they are now to be numbered among the numerous abandoned iron plants of the country.

The New York office of the Mumford Molding Machine Company was closed April 1 and E. H. Mumford, vice-president and general manager, moved his office to the factory, 2059 Elston avenue, Chicago, to be in close touch with the business. All mail should be sent to Chicago. Mr. Mumford personally may be addressed in care of the Machinery Club, while in New York.

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## The Buffalo By-Product Coke-Oven Plant

The general contract for the construction of the by-product coke-oven plant of the Buffalo By-Product Coke Corporation, to be built at South Buffalo, N. Y., has been let to the Otto Coke Oven Company, 6 Church street, New York. The plant will consist of 100 ovens, each of 13¼ net tons capacity. It will use 1766 tons of coal per day, recovering daily 1236 net tons of coke, 35,320 lb. of ammonium sulphate, 14,128 gal. of tar and 19,426,000 cu. ft. of gas. Of the gas produced, 9,713,000 ft. will be consumed in the operation of the plant and the remainder sold to the Lackawanna Steel Company (whose plant is adjoining) under contract.

Thomas V. Salt, Chicago, who has had large experience in the construction and operation of by-product coke-oven plants, will be the operating manager and director. Warren A. Wilbur, South Bethlehem, Pa., is president of the company, and the other directors are as follows: George B. Leighton, director American Steel Foundries, Boston; Frank A. Baird, president Buffalo Union Furnace Company, and H. H. Hewitt, president Hewitt Rubber Company, Buffalo; Thomas C. Clarke, New York City; Carl Otto, director, and M. G. Christie, general manager of the Otto Coke Oven Company of Great Britain, London; Howard E. Mitchell, Cramp, Mitchell & Co., Philadelphia, and Thomas V. Salt, Chicago.

# LARGE PIG-IRON INCREASE

## March Gain Over 8000 Tons a Day

### A Net Increase of Nine Furnaces Due to Steel Works Activity

The March pig-iron statistics show that at a good many plants there was an effort to make a large output. Steel works operations were on a greater scale in some cases than in February and additional blast furnaces were put in commission. The production for the month was 2,347,867 tons, or 75,738 tons a day, against 1,888,670 tons in February, or 67,453 tons a day. Of the gain of 8300 tons a day, 7500 tons were at steel works furnaces. Nineteen furnaces were blown in last month and ten were blown out, making a net gain of nine. The steel companies blew in 13 furnaces and blew out four; the merchant furnaces blew in six and blew out the same number. The active capacity April 1 was 75,911 tons a day, against 71,399 tons a day on March 1.

#### DAILY RATE OF PRODUCTION

The daily rate of production of coke and anthracite pig iron by months, from March, 1913, is as follows:

Daily Rate of Pig-Iron Production by Months—Gross Tons			
	Steel works	Merchant	Total
March, 1913	61,448	27,699	89,147
April	64,658	27,101	91,759
May	64,232	26,807	91,039
June	62,002	25,617	87,619
July	59,362	23,239	82,601
August	59,140	23,981	83,121
September	60,941	23,590	84,531
October	59,630	23,503	83,133
November	52,434	21,019	73,453
December	41,879	22,108	63,987
January, 1914	40,691	20,117	60,808
February	47,479	19,974	67,453
March	54,990	20,748	75,738

#### OUTPUT BY DISTRICTS

The accompanying table gives the production of all coke and anthracite furnaces in March and the three months preceding:

#### Monthly Pig-Iron Production—Gross Tons

	Dec. (31 days)	Jan. (31 days)	Feb. (28 days)	Mar. (31 days)
New York	111,493	101,966	100,802	105,166
New Jersey	11,790	11,341	10,155	9,997
Lehigh Valley	74,766	73,263	66,377	75,616
Schuylkill Valley	62,564	55,831	41,071	49,267
Lower Susquehanna and Lebanon Valley	39,871	37,814	32,751	37,921
Pittsburgh district	469,902	441,688	473,108	470,648
Shenango Valley	74,488	85,076	102,590	141,169
Western Pennsylvania	140,327	127,011	107,847	117,171
Maryland, Virginia and Kentucky	47,893	37,603	30,235	60,205
Wheeling district	78,633	83,193	92,076	123,112
Mahoning Valley	179,530	165,881	174,692	229,922
Central and Northern Ohio	162,702	155,503	164,741	187,110
Hocking Val., Hanging Rock and S. W. Ohio	49,415	41,880	30,389	33,414
Chicago district	247,031	228,439	245,719	317,602
Mich., Minn., Mo., Wis. and Col.	55,012	64,173	63,145	78,566
Alabama	161,554	157,616	136,378	159,882
Tennessee	16,636	16,776	16,594	18,761
Total	1,983,607	1,885,054	1,888,670	2,347,867

#### PRODUCTION OF STEEL COMPANIES

Returns from all furnaces of the United States Steel Corporation and the various independent steel companies show the following totals of product month by month. Only steel-making iron is included in these figures, together with ferromanganese, spiegeleisen and ferrosilicon. These last, while stated separately, are also included in the columns of "total production."

Production of Steel Companies—Gross Tons			
	Pig, total production		
	1912	1913	1914
Jan.	1,483,153	1,981,560	1,261,430
Feb.	1,550,995	1,792,154	1,329,414
Mar.	1,827,792	1,904,878	1,704,688
Apr.	1,830,717	1,939,751	.....
May	1,922,557	1,991,192	.....
June	1,823,958	1,860,070	.....
July	1,803,205	1,840,216	.....
Aug.	1,843,404	1,833,352	.....
Sept.	1,773,073	1,828,232	.....
Oct.	1,947,426	1,848,634	.....
Nov.	1,884,524	1,573,007	.....
Dec.	1,976,870	1,298,262	.....

Spiegeleisen and ferromanganese			
	1912	1913	1914
Jan.	22,622	15,633	17,325
Feb.	15,950	20,131	10,524
Mar.	11,538	20,546	20,133
Apr.	11,104	23,108	.....
May	20,518	19,042	.....
June	26,685	19,212	.....
July	26,522	22,310	.....
Aug.	24,225	20,680	.....
Sept.	22,484	24,555	.....
Oct.	27,252	19,499	.....
Nov.	17,461	26,765	.....
Dec.	18,523	14,095	.....

#### CAPACITY IN BLAST APRIL 1 AND MARCH 1

The following table shows the daily capacity, in gross tons, of furnaces in blast April 1 and March 1, by districts:

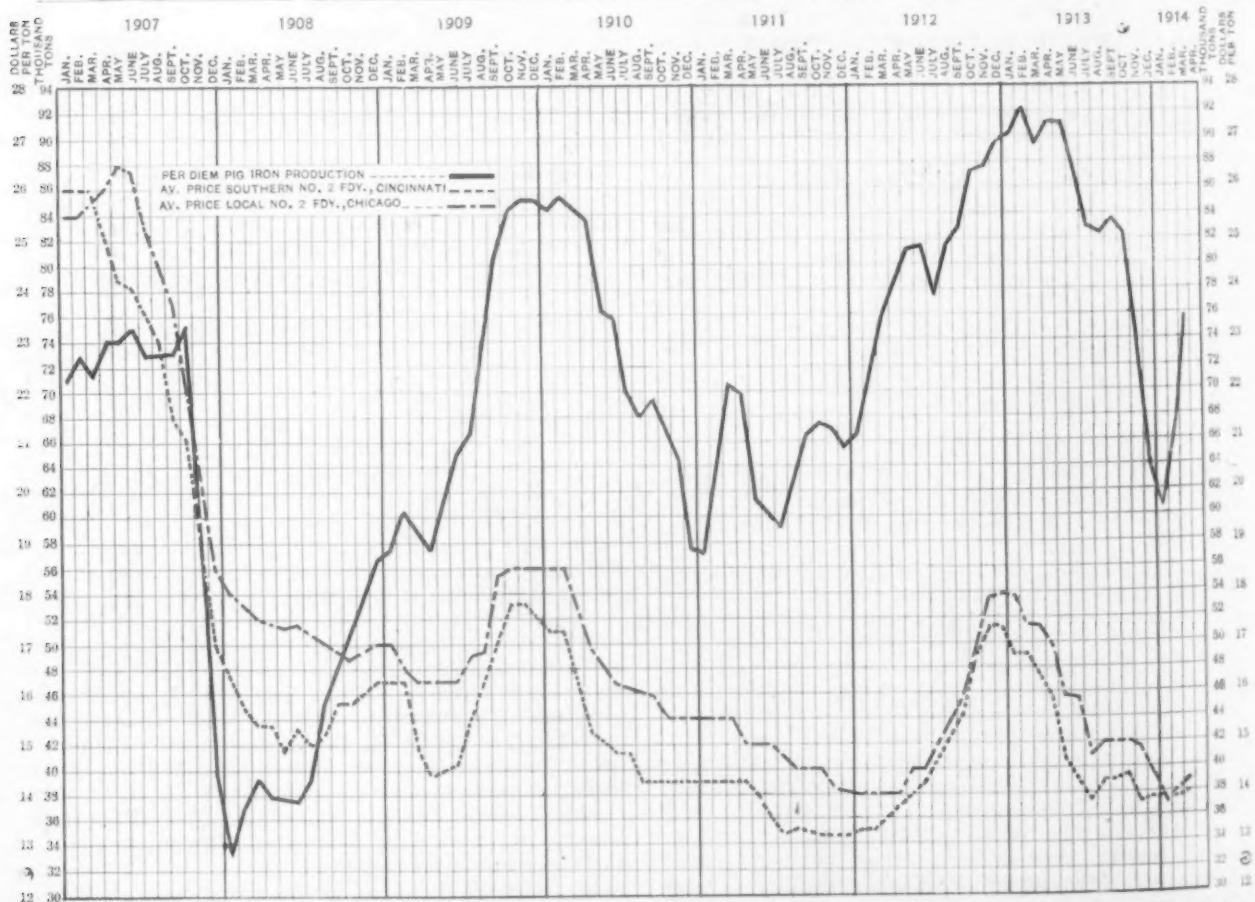


Diagram of Daily Average Production by Months of Coke and Anthracite Pig Iron in the United States from January 1, 1907, to April 1, 1914; Also of Monthly Average Prices of Southern No. 2 Foundry Iron at Cincinnati and Local No. 2 Foundry Iron at Chicago District Furnace

Coke and Anthracite Furnaces in Blast

Location of furnaces	Total number of stacks	Apr. 1		Mar. 1	
		Number in blast	Capacity per day	Number in blast	Capacity per day
New York:					
Buffalo .....	19	13	4,395	11	3,757
Other New York ..	7	1	150	1	200
New Jersey .....	7	2	322	2	363
Pennsylvania:					
Lehigh Valley ..	22	9	2,630	9	2,289
Spiegel .....	2	2	162	1	82
Schuylkill Val. ..	16	6	1,684	5	1,420
Lower Susque-					
hanna .....	7	3	690	2	525
Lebanon Valley ..	10	4	653	4	645
Pittsburgh Dist. ..	52	40	18,255	40	17,995
Spiegel .....	4	2	251	1	140
Shenango Val. ..	19	14	4,634	12	3,985
Western Pa. ....	27	13	3,780	13	4,085
Maryland .....	4	2	630	0	0
Wheeling District ..	14	11	4,036	10	3,493
Ohio:					
Mahoning Val. ....	25	19	7,885	16	6,950
Central and					
Northern .....	24	15	5,940	16	6,105
Hocking Val. ....					
Hanging Rk. ....					
& S. W. Ohio. ....	15	9	1,110	8	952
Illinois and Ind. ....	34	20	9,680	21	9,085
Spiegel .....	2	2	221	1	152
Michigan, Wis. &					
Minn. ....	10	6	1,761	7	1,589
Colo., Mo. & Wash. ....	8	2	731	2	666
The South:					
Virginia .....	24	7	850	8	960
Kentucky .....	5	2	186	2	236
Alabama .....	46	18	4,670	21	5,105
Tennessee .....	20	5	605	5	620
Total .....	423	227	75,911	218	71,399

Among the furnaces which became idle in March were Northern in New York, which will be banked for about four weeks, Aliquippa No. 4 in the Pittsburgh district, one Cambria in western Pennsylvania, one Crozer in Virginia, one Central in northern Ohio, one Iroquois in the Chicago district, Wayne in Michigan and one Bessemer, one Woodward and the stack of the Gulf States Steel Company in Alabama.

The list of furnaces blown in last month includes Buffalo Union B, one Wickwire (Buffalo) and Standish in New York State, one Palmerton (New Jersey Zinc Company) in the Lehigh Valley, one Swede in the Schuylkill Valley, one Steelton in the Lower Susquehanna Valley, one Duquesne and Aliquippa No. 3 in the Pittsburgh district, Atlantic and Hall in the Shenango Valley, Emporium in western Pennsylvania, two Maryland at Sparrows Point, one Bellaire in the Wheeling district, Cherry Valley, one Haselton and one Youngstown Sheet & Tube Company in the Mahoning Valley, Lawrence in the Hanging Rock district and one Joliet in the Chicago district.

DIAGRAM OF PIG-IRON PRODUCTION AND PRICES

The fluctuations in pig-iron production from January, 1907, to the present time are shown in the accompanying chart. The figures represented by the heavy lines are those of daily average production, by months, of coke and anthracite iron. The two other curves on the chart represent monthly average prices of Southern No. 2 foundry pig iron at Cincinnati and of local No. 2 foundry iron at furnace at Chicago. They are based on the weekly market quotations of *The Iron Age*. The figures for daily average production are as follows:

Daily Average Production of Coke and Anthracite Pig Iron in the United States by Months Since January 1, 1907—Gross Tons

	1907	1908	1909	1910	1911	1912	1913	1914
Jan.	31,149	33,918	57,975	84,148	56,752	66,384	90,172	60,808
Feb.	33,038	37,163	60,976	85,616	64,090	72,442	92,369	67,453
Mar.	31,821	39,619	59,232	84,459	70,036	77,591	89,147	75,738
Apr.	33,885	38,289	57,962	82,792	68,836	79,181	91,759	.....
May	34,048	37,603	60,753	77,102	61,079	81,051	91,039	.....
June	34,486	36,444	64,656	75,516	59,585	81,358	87,619	.....
July	32,763	39,287	67,793	69,305	57,841	77,738	82,601	.....
Aug.	32,594	42,851	72,546	67,963	62,150	81,046	82,057	.....
Sept.	32,783	47,300	79,507	68,476	65,903	82,128	83,531	.....
Oct.	33,386	50,554	83,856	67,520	67,811	86,722	82,133	.....
Nov.	60,937	51,595	84,917	63,659	66,648	87,697	74,453	.....
Dec.	39,815	56,158	85,022	57,349	65,912	89,766	63,987	.....

THE RECORD OF PRODUCTION

Production of Coke and Anthracite Pig Iron in the United States by Months Since January 1, 1910—Gross Tons

	1910	1911	1912	1913	1914
Jan.	2,608,605	1,759,326	2,057,911	2,795,331	1,885,054
Feb.	2,397,254	1,794,509	2,100,815	2,586,337	1,888,670
Mar.	2,617,949	2,171,111	2,405,318	2,763,563	2,347,867
Apr.	2,483,763	2,064,086	2,375,436	2,752,761	.....
May	2,390,180	1,893,456	2,512,582	2,822,217	.....
June	2,265,478	1,787,566	2,440,745	2,628,565	.....
July	2,148,442	1,793,068	2,410,889	2,560,646	.....
Aug.	2,106,847	1,926,637	2,512,431	2,545,763	.....
Sept.	2,056,275	1,997,102	2,463,839	2,505,927	.....
Oct.	2,093,121	2,102,147	2,689,993	2,546,261	.....
Nov.	1,909,780	1,999,473	2,630,854	2,233,123	.....
Dec.	1,777,817	2,045,270	2,782,737	1,983,607	.....

Efficiency Exposition in New York

The First National Efficiency Exposition and Conference, so called, is holding forth this week at the Grand Central Palace, New York City. It is held under the auspices of the Efficiency Society and there are good exhibits and otherwise. In the first class are highly educational displays of the Public Service Commission of the First District, New York; the New York Edison Company; the Interborough Rapid Transit Company, New York; the New York Telephone Company; the Consolidated Gas Company, New York, and others in the public service class. There is, however, at least one device exhibited to which the exposition in its official programme has substantially given indorsement, to use no stronger term. For example at this late day space is given to expounding the merits of a contrivance for saving the house dweller and the office worker "from defective sewage systems permitting the escape of the most virulent of gases, sewer gas. These germ-laden gases are very volatile and spread insidiously. The danger is traceable to the drainage pipes and water taps in vogue in the present plumbing system. . . . The viper, gorged with deadly germs, awaits ingress through the open water traps, that it may inject its venom into unsuspecting humanity."

Of exhibits in which readers of *The Iron Age* would have an interest may be mentioned the following: The George P. Clark Company, Windsor Locks, Conn., is showing industrial transfer trucks of the kind which lift and transport portable platforms loaded with goods in process of manufacture. The General Vehicle Company, Long Island City, N. Y., is exhibiting a 2000-lb. electric truck for interior haulage; the C. W. Hunt Company, Inc., West New Brighton, N. Y., a storage battery industrial truck, and the Knox Automobile Company, Springfield, Mass., is down for a three-wheel tractor.

The Knickerbocker Film Company, 6 Church street, New York, has a miniature studio showing something of the equipment needed for taking industrial motion pictures, now employed in some selling campaigns.

The National Lead Company, New York, has a demonstration by charts and models of the progress made in die casting. The United States Steel Corporation has a small exhibit to emphasize what it has done in safety, sanitation and welfare.

On Tuesday evening the Efficiency Society held a dinner at the Grand Central Palace. The dinner was arranged in part to afford an opportunity to hear Dr. Frederick W. Taylor discourse on scientific management, and he held forth for nearly 1½ hours. He mentioned that there were 15,000 to 20,000 men now working under scientific management; that they were earning 30 to 100 per cent. higher wages; that their output had doubled, and that a lower selling price was made to the consumer. In the 30 years that scientific management has been coming, not a single strike has occurred in the shops in which it has finally been installed.

Blast Furnace Notes

The No. 1 blast furnace of Worth Brothers Company at Coatesville, Pa., made its best record in March, producing 14,166 tons of basic pig iron, or an average of 457 tons a day.

In the Buffalo district two more furnaces were active on April 1 than on March 1, one Wickwire furnace and Buffalo Union furnace B having blown in in the past month.

The Andover Iron Company blast furnace property at Phillipsburg, N. J., owned by the Joseph Wharton estate was sold recently and it is understood the furnace will be dismantled. The property was bought by individuals, but it is now stated that it has been transferred to the Pennsylvania Railroad which desired the land for track purposes.

No. 1 blast furnace of the Shenango Furnace Company at Sharpsville, Pa., will go out the latter part of this week for relining and repairs.

The Toledo Furnace Company, Toledo, Ohio, blew out its B furnace April 4 for relining.

# The Iron and Metal Market

## WAGE REDUCTIONS

### Some Already Made, Others Likely

#### March Pig Iron Output Large, But Steel Works Are Now Curtailing Somewhat

It now seems likely that wages will be reduced at iron and steel works if conditions as to prices and demand continue as unsatisfactory as in recent weeks. Reductions have already come, in fact, at the plants of some of the smaller companies. Common labor, which for nearly two years has been receiving \$2 at a good many steel mills, is now paid \$1.75 at others and in some cases as low as \$1.50. The probability of early action on all wage schedules at the larger steel works, including skilled labor, is indicated by a conference on the subject held at Pittsburgh Tuesday, and attended by the presidents of five independent steel companies.

An impressive scale of steel works operation in March is indicated by the pig iron output of that month; but April has already brought some slackening off in steel production and as the month advances pig iron output promises to be less, two furnaces having gone out since April 1.

Our statistics show 2,347,867 tons of coke iron produced last month, or 75,738 tons a day, against 1,888,670 tons in February, or 67,453 tons a day. The March rate thus represented 27,900,000 tons a year, estimating charcoal iron, or an increase of 3,000,000 tons a year over the February rate. Steel works furnaces contributed 7500 tons of the 8285 tons a day increase last month and all of the net gain of nine active blast furnaces shown on April 1. The daily capacity of the 227 furnaces in blast April 1 was 75,911 tons, against 71,399 tons a day for 218 furnaces on March 1.

While the steel trade shares in the better feeling created by the promise of the country's largest winter wheat crop for this year, there has been no check in the decline of order book totals. The Steel Corporation's statement as of March 31 will show a heavy falling off. Its ingot production this week is 70 per cent. of capacity; for most of March it was 80 per cent. of capacity.

In the present condition of car shops, the orders of this week are timely though leaving scant profit. The Chicago & Northwestern has placed 2000 steel cars and the Great Northern 2000 refrigerator cars. The Southern Pacific is in the market for 1300 and may buy several thousand more. The Steel Corporation's orders for 3500 steel cars may be given this week. As showing that the railroads have not actually starved the steel trade, bad as the year has been thus far, reliable figures are made footing up 600,000 tons of rails and 32,000 cars ordered since January 1.

The Pennsylvania Railroad has ordered 10,000 tons of rails from the Pennsylvania Steel Company and 10,000 tons from the Cambria Steel Company, 5000 tons in each case to be rolled after last year's and a like amount after the new specifications. This will show how the two actually work out in the mill and what extra should be paid for cropping

practically all the steel that has heretofore gone in the "A" rail. The Louisville & Nashville has added 5000 tons to its original rail contract, and another order from a Southern road is pending.

Under the expectation of lower prices specifications have shrunk since the opening of the second quarter. Sales of bars and shapes for delivery up to June 1 and in some cases to July 1 have been made at 1.20c., Pittsburgh, and on attractive orders at 1.15c. On plates, with most mills running slacker, 1.15c. is shaded 50c. to \$1 a ton.

Smaller steel companies have been willing to sell billets at less than \$21 and sheet bars at less than \$22, Pittsburgh, but most users are covered by contracts for several weeks ahead.

Rarely has the pig iron trade seen greater stagnation than has marked the past fortnight. The advances asked by producers have led consumers to put off indefinitely buying for the second half which commonly would be in order now.

Iron and steel exports in February were only about half those in February, 1913, products reported by weight falling off from 241,843 tons to 121,198 tons. The lower tariff has not stimulated imports as yet, the February figures being only 14,308 tons, as against 25,504 tons in February, 1913.

## A Comparison of Prices

### Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous

	Apr. 8, 1914.	Apr. 1, 1914.	Mar. 11, 1914.	Apr. 9, 1913.
<b>Pig Iron, Per Gross Ton:</b>				
No. 2 X, Philadelphia...	\$15.00	\$15.00	\$15.00	\$17.75
No. 2, Valley furnace...	13.25	13.25	13.25	16.00
No. 2 Southern, Cn'tl...	13.75	13.75	14.00	15.75
No. 2, Birmingham, Ala.	10.50	10.50	10.75	12.50
No. 2, furnace, Chicago*	14.25	14.25	14.25	17.25
Basic, del'd, eastern Pa...	14.25	14.25	14.00	17.00
Basic, Valley furnace...	13.00	13.00	13.00	16.00
Bessemer, Pittsburgh...	14.90	14.90	15.15	17.99
Malleable Bess., Ch'go*	14.25	14.25	14.25	17.25
Gray forge, Pittsburgh...	13.65	13.65	13.65	16.65
L. S. charcoal, Chicago...	15.25	15.25	15.25	18.00

<b>Billets, etc., Per Gross Ton:</b>				
Bess. billets, Pittsburgh...	21.00	21.00	21.00	28.50
O.-h. billets, Pittsburgh...	21.00	21.00	21.00	29.00
O.-h. sheet bars, P'gh...	22.00	22.00	22.00	29.50
Forging billets, base, P'gh...	25.00	25.00	25.00	36.00
O.-h. billets, Phila...	23.40	23.40	23.40	30.00
Wire rods, Pittsburgh...	26.00	26.00	26.50	30.00

<b>Old Material, Per Gross Ton:</b>				
Iron rails, Chicago...	12.75	12.75	12.75	16.25
Iron rails, Philadelphia...	15.50	16.50	16.50	18.25
Carwheels, Chicago...	11.50	11.75	11.75	16.75
Carwheels, Philadelphia...	12.00	12.00	12.75	15.00
Heavy steel scrap, P'gh...	12.00	12.00	12.25	14.25
Heavy steel scrap, Phila...	11.00	11.00	11.50	13.50
Heavy steel scrap, Ch'go...	9.50	9.75	9.75	12.50
No. 1 cast, Pittsburgh...	11.50	11.50	11.50	14.25
No. 1 cast, Philadelphia...	13.00	13.00	13.00	14.00
No. 1 cast, Ch'go (net ton)	10.25	10.25	10.50	12.50

<b>Finished Iron and Steel,</b>				
Per Lb. to Large Buyers:	Cents.	Cents.	Cents.	Cents.
Bess. rails, heavy, at mill	1.25	1.25	1.25	1.25
Iron bars, Philadelphia...	1.22 3/4	1.22 1/2	1.25	1.67 1/2
Iron bars, Pittsburgh...	1.30	1.35	1.40	1.70
Iron bars, Chicago...	1.15	1.17 1/2	1.15	1.57 1/2
Steel bars, Pittsburgh...	1.15	1.15	1.20	1.85
Steel bars, New York...	1.31	1.31	1.36	2.01
Tank plates, Pittsburgh...	1.15	1.15	1.20	1.70
Tank plates, New York...	1.31	1.31	1.36	1.76
Beams, etc., Pittsburgh...	1.15	1.15	1.20	1.70
Beams, etc., New York...	1.31	1.31	1.36	1.76
Skelp, grooved steel, P'gh	1.20	1.20	1.20	1.45
Skelp, sheared steel, P'gh	1.25	1.25	1.25	1.50
Steel hoops, Pittsburgh...	1.25	1.25	1.30	1.60

<b>Sheets, Nails and Wire,</b>				
Per Lb. to Large Buyers:	Cents.	Cents.	Cents.	Cents.
Sheets, black, No. 28, P'gh.	1.95	1.95	1.95	2.35
Galv. sheets, No. 28, P'gh.	2.95	2.95	2.95	3.50
Wire nails, Pittsburgh...	1.60	1.60	1.60	1.80
Cut nails, Pittsburgh...	1.65	1.65	1.65	1.70
Fence wire, base, P'gh...	1.40	1.40	1.40	1.60
Barb wire, galv., P'gh...	2.00	2.00	2.00	2.20

\*The average switching charge for delivery to foundries in the Chicago district is 50c. per ton.

## Coke, Connellsville,

	Apr. 8,	Apr. 1,	Mar. 11,	Apr. 9,
Per Net Ton at Oven:	1914.	1914.	1914.	1913.
Furnace coke, prompt...	\$1.85	\$1.85	\$2.00	\$2.00
Furnace coke, future...	2.00	2.00	2.00	2.25
Foundry coke, prompt...	2.40	2.40	2.50	3.00
Foundry coke, future...	2.50	2.55	2.75	3.00

## Metals.

Metals.	Per lb. to Large Buyers:	Cents.	Cents.	Cents.	Cents.
Lake copper, New York.....		14.77 1/2	14.87 1/2	14.75	15.62 1/2
Electrolytic copper.....	<b>14.55</b>		14.37 1/2	14.25	15.37 1/2
Spelter, St. Louis.....		5.12 1/2	5.12 1/2	5.15	5.75
Spelter, New York.....		5.27 1/2	5.27 1/2	5.30	5.90
Spelter, St. Louis.....		3.67 1/2	3.70	3.90	4.20
Lead, New York.....		3.80	3.80	4.00	4.35
Tin, New York.....		36.70	37.90	38.12 1/2	48.00
Antimony, Hallett's, N. Y.		6.75	6.75	6.90	8.50
Tin plate, 100-lb. box, P'gh		\$3.30	\$3.30	\$3.30	\$3.60

Finished Iron and Steel f. o. b. Pittsburgh

Freight rates from Pittsburgh, in carloads, per 100 lb.: New York, 16c.; Philadelphia, 15c.; Boston, 18c.; Buffalo, 11c.; Cleveland, 10c.; Cincinnati, 15c.; Indianapolis, 17c.; Chicago, 18c.; St. Louis, 22½c.; Kansas City, 42½c.; Omaha, 42½c.; St. Paul, 32c.; Denver, 84½c.; New Orleans, 30c.; Birmingham, Ala., 45c.; Pacific coast, 80c. on plates, structural shapes and sheets No. 11 and heavier; 85c. on sheets Nos. 12 to 16; 95c. on sheets No. 16 and lighter; 65c. on wrought pipe and boiler tubes.

**Plates.**—Tank plates,  $\frac{1}{4}$  in. thick,  $6\frac{1}{4}$  in. up to 100 in. wide, 1.15c., base, net cash, 30 days. Following are stipulations prescribed by manufacturers with extras:

Rectangular plates, tank steel or conforming to manufacturer's standard specifications for structural steel dated February 6, 1903, or equivalent,  $\frac{1}{4}$  in. and over on thinnest edge, 100 in. wide and under, down to but not including 6 in. wide, are base.

Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per sq. ft., are considered  $\frac{1}{4}$ -in. plates. Plates over 72 in. wide must be ordered  $\frac{1}{4}$  in. thick on edge, or not less than 11 lb. per sq. ft., to take base price. Plates over 72 in. wide ordered less than 11 lb. per sq. ft. down to the weight of 3-16 in. take the price of 3-16 in.

Allowable overweight, whether plates are ordered to gauge or weight, to be governed by the standard specifications of the Association of American Steel Manufacturers.

Extras	Cents per lb.
Gauges under $\frac{1}{4}$ in. to and including 3-16 in.	10
Gauges under 3-16 in. to and including No. 8.	15
Gauges under No. 8 to and including No. 9.	25
Gauges under No. 9 to and including No. 10.	30
Gauges under No. 10 to and including No. 12.	40
Sketches (including straight taper plates), 3 ft. and over	10
Complete circles 3 ft. in diameter and over.	20
Boiler and flange steel.	10
"A. B. M. A." and ordinary firebox steel.	20
Still bottom steel	30
Marine steel	40
Locomotive firebox steel	50
Widths over 100 in. up to 110 in., inclusive.	95
Widths over 110 in. up to 115 in., inclusive.	10
Widths over 115 in. up to 120 in., inclusive.	15
Widths over 120 in. up to 125 in., inclusive.	25
Widths over 125 in. up to 130 in., inclusive.	50
Widths over 130 in.	1.00
Cutting to lengths, under 3 ft., to 2 ft. inclusive.	25
Cutting to lengths, under 2 ft., to 1 ft. inclusive.	50
Cutting to lengths, under 1 ft.	75

No charge for cutting rectangular plates to lengths 3 ft. and over.

**Structural Material.**—I-beams, 3 to 15 in.; channels, 3 to 15 in.; angles, 3 to 6 in. on one or both legs,  $\frac{1}{4}$  in. thick and over, and zeos, 3 in. and over, 1.15c. to 1.20c. Extras on other shapes and sizes are as follows:

	Cents per lb
I-beams over 15 in.....	.10
H-beams over 18 in.....	.10
Angles over 6 in. on one or both legs.....	.10
Angles, 3 in. on one or both legs, less than $\frac{3}{4}$ in. thick, as per steel bar card, Sept. 1, 1909.....	.70
Tees, structural sizes (except elevator, hand rail, car truck and conductor rail).....	.05
Channels and tees, under 3 in. wide, as per steel bar card, Sept. 1, 1909.....	.20 to .80
Deck beams and bulb angles.....	.30
Hand rail tees.....	.75
Cutting to lengths, under 3 ft. to 2 ft. inclusive.....	.25
Cutting to lengths, under 2 ft. to 1 ft. inclusive.....	.50
Cutting to lengths, under 1 ft.....	1.55
No charge for cutting to lengths 3 ft. and over.	

**Wire Products.**—Fence wire, Nos. 0 to 9 per 100 lb., terms 60 days or 2 per cent. discount in 10 days, carload lots to jobbers, annealed, \$1.40; galvanized, \$1.80. Galvanized barb wire and fence staples to jobbers, \$2; painted, \$1.60. Wire nails to jobbers, \$1.60. Prices of the foregoing wire products to dealers in carload lots are 5c. higher. Woven wire fencing, 73½ per cent. off list for carloads; 72½ off for 1000-rod lots; 71½ off for less than 1000-rod lots.

The following table gives the price to retail merchants on fence wire in less than carloads, with the extras added to the base price:

Plain Wire, per 100 lb.

Nos.	0 to 9	10	11	12&12½	13	14	15	16
Annealed	\$.160	\$.165	\$.170	\$.175	\$.185	\$.195	\$2.05	\$2.15
Galvanized	2.05	2.05	2.10	2.15	2.25	2.35	2.75	2.85

**Wire Rods.**—Bessemer, open-hearth and chain rods, \$26.

**Wrought Pipe.**—The following are the jobbers' car-load discounts on the Pittsburgh basing card on steel pipe in effect from February 2, 1914, and iron pipe from June 2, 1913, all full weight:

<b>Butt Weld</b>					
<b>Steel.</b>			<b>Iron.</b>		
Inches.	Black.	Galv.	Inches.	Black.	Galv.
1 $\frac{1}{8}$ , $\frac{1}{4}$ and $\frac{3}{8}$ .....	72 $\frac{1}{2}$	52	$\frac{1}{8}$ and $\frac{1}{4}$ .....	66	47
1 $\frac{1}{2}$ .....	76 $\frac{1}{2}$	66	$\frac{3}{8}$ .....	65	56
$\frac{3}{4}$ to 3.....	79 $\frac{1}{2}$	71	$\frac{1}{2}$ .....	69	56
			$\frac{3}{4}$ to 2 $\frac{1}{2}$ .....	72	61
<b>Lap Weld</b>					
2.....	76 $\frac{1}{2}$	68	1 $\frac{1}{4}$ .....	56	45
2 $\frac{1}{2}$ to 6.....	78 $\frac{1}{2}$	70	1 $\frac{1}{2}$ .....	67	56
7 to 12.....	75 $\frac{1}{2}$	65	2.....	68	58
13 to 15.....	52 $\frac{1}{2}$	..	2 $\frac{1}{2}$ to 4.....	70	61
			4 $\frac{1}{2}$ to 8.....	70	61
			7 to 12.....	68	55
<b>Reamed and Drifted</b>					
1 to 3, butt.....	77 $\frac{1}{2}$	69	1 to 1 $\frac{1}{2}$ , butt....	70	59
2, lap.....	74 $\frac{1}{2}$	66	2, butt.....	70	59
2 $\frac{1}{2}$ to 6, lap....	76 $\frac{1}{2}$	68	1 $\frac{1}{4}$ , lap.....	54	43
			1 $\frac{1}{2}$ , lap.....	65	54
			2, lap.....	66	56
			2 $\frac{1}{2}$ to 4, lap....	68	59
<b>Butt Weld, extra strong, plain ends</b>					
1 $\frac{1}{8}$ , $\frac{1}{4}$ and $\frac{3}{8}$ .....	67 $\frac{1}{2}$	57	$\frac{3}{8}$ .....	63	52
1 $\frac{1}{2}$ .....	72 $\frac{1}{2}$	66	$\frac{1}{2}$ .....	67	60
$\frac{3}{4}$ to 1 $\frac{1}{2}$ .....	76 $\frac{1}{2}$	70	$\frac{3}{4}$ to 1 $\frac{1}{2}$ .....	71	62
2 to 3.....	77 $\frac{1}{2}$	71	2 and 2 $\frac{1}{2}$ .....	72	63
<b>Lap Weld, extra strong, plain ends</b>					
2.....	73 $\frac{1}{2}$	65	1 $\frac{1}{2}$ .....	65	59
2 $\frac{1}{2}$ to 4.....	75 $\frac{1}{2}$	67	2.....	66	58
4 $\frac{1}{2}$ to 6.....	74 $\frac{1}{2}$	66	2 $\frac{1}{2}$ to 4.....	70	61
7 to 8.....	67 $\frac{1}{2}$	57	4 $\frac{1}{2}$ to 6.....	69	60
9 to 12.....	62 $\frac{1}{2}$	52	7 and 8.....	63	53
			9 to 12.....	58	47
<b>Butt Weld, double extra strong, plain ends</b>					
1 $\frac{1}{8}$ .....	62 $\frac{1}{2}$	56	$\frac{1}{2}$ .....	57	49
$\frac{3}{4}$ to 1 $\frac{1}{2}$ .....	65 $\frac{1}{2}$	59	$\frac{3}{4}$ to 1 $\frac{1}{2}$ .....	60	52
2 to 2 $\frac{1}{2}$ .....	67 $\frac{1}{2}$	61	2 and 2 $\frac{1}{2}$ .....	62	54
<b>Lap Weld, double extra strong, plain ends</b>					
2.....	63 $\frac{1}{2}$	57	2.....	55	49
2 $\frac{1}{2}$ to 4.....	65 $\frac{1}{2}$	59	2 $\frac{1}{2}$ to 4.....	60	54
4 $\frac{1}{2}$ to 6.....	64 $\frac{1}{2}$	58	4 $\frac{1}{2}$ to 6.....	59	53
7 to 8.....	57 $\frac{1}{2}$	47	7 to 8.....	52	46

To the large jobbing trade an additional 5 and 2½ per cent. is allowed over the above discounts.

The above discounts are subject to the usual variation in weight of 5 per cent. Prices for less than carloads are two (2) points lower basing (higher price) than the above discounts on black and three (3) points on galvanized.

**Boiler Tubes.**—Discounts to jobbers, in carloads, in effect from January 2, 1914, are as follows:

Lap Welded Steel		Standard Charcoal Iron	
1½ and 2 in.	61	1½ in.	47
1½ in.	58	1½ and 2 in.	49
1½ and 2½ in.	64	2½ in.	45
2 and 3½ in.	69	2½ to 2¾ in.	54
1½ and 4½ in.	71	3 and 3½ in.	57
2 and 6 in.	64	3½ to 4½ in.	60
7 to 13 in.	61	5 and 6 in.	48

Locomotive and steamship special charcoal grades bring higher prices.

2½ in. and smaller, over 18 ft., 10 per cent. net extra.

Less than carloads will be sold at the delivered discounts for carloads, lowered by two points for lengths 22 ft. and under to destinations east of the Mississippi River; lengths over 22 ft., and all shipments going west of the Mississippi River must be sold f.o.b. mill at Pittsburgh basing discount, lowered by two points.

**Sheets.**—Makers' prices for mill shipment on sheets of U. S. Standard gauge, in carload and larger lots, on which jobbers charge the usual advance for small lots from store, are as follows, f.o.b. Pittsburgh, terms 30 days net or 2 per cent. cash discount in 10 days from date of invoice:

### Blue Annealed Sheets

	Cents per lb.
Nos. 3 to 8 .....	1.35 to 1.40
Nos. 9 to 10 .....	1.40 to 1.45
Nos. 11 and 12 .....	1.45 to 1.55
Nos. 13 and 14 .....	1.50 to 1.60
Nos. 15 and 16 .....	1.60 to 1.65

## For Annealed Sheets, Cold Rolled

Nos. 10 and 11	1.60 to 1.65
No. 12	1.60 to 1.65
Nos. 13 and 14	1.65 to 1.70
Nos. 15 and 16	1.70 to 1.75
Nos. 17 to 21	1.75 to 1.80
Nos. 22 and 24	1.80 to 1.85
Nos. 25 and 26	1.85 to 1.90
No. 27	1.90 to 1.95
No. 28	1.95 to 2.00
No. 29	2.00 to 2.05
No. 30	2.10 to 2.15

## Galvanized Sheets of Black Sheet Gauge

	Cents per lb.
Nos. 10 and 11	1.95 to 2.00
No. 12	2.05 to 2.10
Nos. 13 and 14	2.05 to 2.10
Nos. 15 and 16	2.20 to 2.25
Nos. 17 to 21	2.35 to 2.40
Nos. 22 and 24	2.50 to 2.55
Nos. 25 and 26	2.65 to 2.70
No. 27	2.80 to 2.85
No. 28	2.95 to 3.00
No. 29	3.10 to 3.15
No. 30	3.25 to 3.30

## Pittsburgh

PITTSBURGH, PA., April 8, 1914.

No signs of betterment in the steel trade are seen, but, on the contrary, conditions seem to be getting quieter. The present demand seems to be only for actual needs, but it is noteworthy that some of the large steel companies are not trying to force business, not being willing to sell plates, shapes and bars at 1.15c. for future delivery except for specific work, confining sales as far as possible to spot shipment. Large consumers who placed contracts some time ago are not specifying freely, and most of the steel mills have little work ahead of them. Operations are now being restricted, one leading steel interest operating this week to about 60 per cent. of its capacity, as against close to 75 per cent. last week. Prices on nearly everything are weak, with not enough new business coming out to test the market. At the same time business is backing up, and when it starts to come, especially from the railroads, it is going to be heavy. There is serious talk of wage reductions on nearly all kinds of industrial labor unless conditions soon improve.

**Pig Iron.**—The local market is stagnant, several large dealers reporting that they have not a single inquiry. An open-hearth steel maker in the Wheeling district has bought about 2000 tons of basic for second quarter delivery at the reported price of \$13.20 delivered, or \$13 at furnace. A nearby steel casting company, outside this city, is said to have bought 500 tons of basic at a price somewhat less than \$13 at furnace. Not enough pig iron of any kind is being sold to establish prices. In the absence of actual sales only nominal prices are ruling as follows: Bessemer, \$14; basic, \$13; No. 2 foundry, \$13.25 to \$13.50; gray forge, \$12.75 to \$13; malleable Bessemer, \$13.25 for delivery through first half of this year, all at Valley furnace, the freight rate to the Pittsburgh or Cleveland district being 90c. a ton.

**Billets and Sheet Bars.**—In February and early March, shipments of sheet bars to the sheet and tinplate mills were heavy, with the result that nearly all consumers have enough on hand to tide them over the next month or two, and there is no new inquiry. A local interest reports a small sale of Bessemer sheet bars at about \$23, but this is regarded as considerably above the market. It is stated that some of the small steel mills are offering open-hearth billets below \$21 and sheet bars below \$22 at makers' mills. We quote Bessemer and open-hearth billets at \$21 and Bessemer and open-hearth sheet bars at \$22, f.o.b. makers' mills, Pittsburgh or Youngstown, for April shipment; forging billets, \$25 on desirable specifications, embracing only one size, and up to but not including 10 x 10 in., the regular extras being charged for larger sizes. On small orders forging billets are held at \$26. We quote axle billets at \$23 for desirable orders and \$24 for small orders.

**Muck Bar.**—In the absence of sales we quote best grades of muck bar, made from all pig iron, at about \$27.50 delivered to consumers' mills in the Pittsburgh district.

**Steel Rails.**—Only small orders for standard sections for domestic roads are being placed, but the Carnegie Steel Company has taken some good orders lately for standard sections and light rails for export. The new demand for light rails is fairly active and is expected to be better as soon as the coal mining scale for the Ohio miners is settled. The Carnegie Company received new orders and specifications in the past week for about 2200 tons of light rails. We quote splice bars at 1.50c. and standard section rails at 1.25c. Light rails,

rolled from billets, are now quoted about as follows: 25, 30, 35, 40 and 45 lb. sections, 1.10c.; 16 and 20 lb., 1.15c.; 12 and 14 lb., 1.20c., and 8 and 10 lb., 1.25c., in carload lots, f.o.b. Pittsburgh. For large lots, these prices might be slightly shaded.

**Plates.**—No improvement is observed in the situation in plates, the new demand being dull. Few orders for steel cars are being placed. The report that the Southern Pacific was inquiring for 5100 cars is incorrect. It has an inquiry out for 1030 steel gondolas and 303 steel tank cars. The Chicago & Northwestern is reported to have placed 2000 box cars with the Pullman Company. The order of the Steel Corporation for 2500 ore cars for the Bessemer & Lake Erie and 1000 ore cars for the Duluth, Missabe & Northern has not yet been placed. One of the large steel car companies in this district, that can turn out close to 150 steel cars per day, states it is not building over 10 at the present time. Prices on plates continue weak, and it is said that 1.15c. on very desirable orders can be shaded about \$1 a ton. We quote ¼-in. and heavier plates at 1.15c. for current orders, f.o.b. Pittsburgh.

**Structural Material.**—New inquiry in the past week has been a little better. Some large jobs are in the air which may come out at any time. The American Bridge Company has taken 800 to 1000 tons for a new cast house, engine and boiler house for the Andrews & Hitchcock Iron Company, Youngstown, Ohio; the Jones & Laughlin Steel Company, 1300 tons for the Union Trust Company's building, Cincinnati, and 1500 tons of steel piling for the city of Memphis; the McClintic-Marshall Company, 400 tons of bridge work and about 1000 tons for other miscellaneous jobs. We quote beams and channels up to 15 in. at 1.15c. for desirable orders and 1.20c. for small orders.

**Iron and Steel Bars.**—Buying of both iron and steel bars is mostly of small lots, jobbers and consumers not showing much desire to order ahead. Specifications are moderate, not so heavy as a month or so ago. Steel bars seem to have settled down to 1.15c., makers' mills, but several leading makers say they will not sell at this price for delivery beyond April, unless in case of specified work. The mills rolling iron bars are not doing much. We quote steel bars at 1.15c. to 1.20c. and common iron bars at 1.30c. to 1.35c., f.o.b., makers' mills, Pittsburgh. The demand for steel bars for reinforcing purposes is fairly active. Regular extras for twisting reinforcing steel bars over the base price are as follows: ¾-in. and over, \$1; ½ to 11/16 in., \$1.50; under ½ in., \$2.50 per net ton. These extras are not always observed, and mills that roll steel bars from old rails sometimes entirely omit them.

**Wire Rods.**—The quiet condition in wire products is reflected in rods which are in but little demand. Specifications are not heavy. Most consumers are covered up to July. We quote Bessemer, open-hearth and chain rods at \$26 to \$26.50 f.o.b. Pittsburgh.

**Skelp.**—The demand is light, as none of the pipe mills is able to get orders enough to run full, and but little skelp is being bought in the open market. Prices are well held. We quote: Grooved steel skelp, 1.20c. to 1.25c.; sheared steel skelp, 1.25c. to 1.30c.; grooved iron skelp, 1.60c. to 1.65c., and sheared iron skelp, 1.65c. to 1.70c., delivered to consumers' mills in the Pittsburgh district.

**Ferroalloys.**—Both ferromanganese and ferrosilicon are quiet, as most consumers are covered for some months. None of the steel mills is operating full, and this is naturally decreasing the consumption of ferroalloys. An occasional carload of ferromanganese is sold on the basis of about \$38, Baltimore. If a large inquiry was to come out, probably \$37 could be done. We quote the market for English 80 per cent. at \$37 to \$38, Baltimore, the freight to Pittsburgh being \$2.16 a ton. We quote 50 per cent. ferrosilicon, in lots up to 100 tons, at \$73; over 100 tons to 600 tons, \$72; over 600 tons, \$71, delivered in the Pittsburgh district. We quote 10 per cent. ferrosilicon at \$20; 11 per cent., \$21, and 12 per cent., \$22, f.o.b. cars Jackson County, Ohio, or Ashland, Ky., furnaces. We quote 20 per cent. spiegel-eisen at \$25 at furnace. We quote ferrotitanium at 8c. per lb. in carloads; 10c. in 2000-lb. lots and over, and 12½c. in less than 2000-lb. lots.

**Nuts, Bolts and Rivets.**—Nut and bolt makers report the new demand light. Specifications on contracts are only fair, and there is not enough business going to give the makers full work. The new demand for boiler and structural rivets is quiet. We quote button-head structural rivets at \$1.60 to \$1.65 and cone-head boiler rivets at \$1.70 to \$1.75, in carload lots, an advance of about \$2 a ton over these prices being charged for small lots. Terms are 30 days net, less 2 per cent. for cash in 10 days. Discounts on nuts and bolts are as follows in lots of 300 lb. or over, delivered within a 20c. freight radius of makers' works:

Coach and lag screws.....	80 and 5% off
Small carriage bolts, cut threads.....	80% off
Small carriage bolts, rolled threads.....	80 and 5% off
Large carriage bolts.....	75 and 5% off
Small machine bolts, cut threads.....	80 and 5% off
Small machine bolts, rolled threads.....	80 and 10% off
Large machine bolts.....	75 and 10% off
Machine bolts, c.p.c. & t nuts, small.....	80% off
Machine bolts, c.p.c. & t nuts, large.....	75 and 5% off
Square h.p. nuts, blanked and tapped.....	\$6.30 off list
Hexagon nuts.....	\$7.20 off list
C.p.c. and r sq. nuts, blanked and tapped.....	\$6.00 off list
Hexagon nuts, % and larger.....	\$7.20 off list
Hexagon nuts, smaller than 9/16.....	\$7.20 off list
C.P. plain square nuts.....	\$7.80 off list
C.P. plain hexagon nuts.....	\$5.50 off list
Semi-fin. hex. nuts, % and larger.....	85 and 5% off
Semi-fin. hex. nuts, smaller than 9/16.....	85, 10 & 10% off
Rivets, 7/16 x 6 1/2, smaller & shorter.....	80, 10 & 5% off
Rivets, metallic tinned, bulk.....	80, 10 and 5% off
Rivets, tin plated, bulk.....	80, 10 and 5% off
Rivets, metallic tinned, packages.....	80, 10 and 5% off
Standard cap screws.....	70, 10 and 10% off
Standard set screws.....	75, 10 and 10% off

**Standard Pipe.**—The new demand for pipe has shown a falling off. None of the pipe mills is running to over 75 per cent. of capacity, and some are operating at a less rate. Makers expect a heavier demand as soon as outside work has actively started. Inquiries are out for three or four good-sized lots of line pipe for gas and oil. It is stated that discounts on both iron and steel pipe are only being fairly well held.

**Boiler Tubes.**—Several makers report the new demand slightly better for both merchant and locomotive tubes. Some of the smaller tube mills, however, seem anxious to get orders, and discounts are being more or less shaded.

**Sheets.**—The placing of new orders for black and galvanized sheets is not so active as early in March, and specifications against contracts show a falling off. Prices are not so firm as they were. While some mills are taking contracts for delivery through the second quarter on the basis of 1.95c. for No. 28 black and 2.95c. for No. 28 galvanized, in a few cases these prices have been shaded \$1 a ton. Sheet mills are operating at not over 75 per cent. of capacity, and some are running at a less rate. The new demand for blue annealed sheets is fair, and prices are now on the basis of about 1.40c., makers' mills, for Nos. 9 and 10. We quote No. 28 Bessemer black sheets at 1.95c. to 2c.; No. 28 galvanized, 2.95c. to 3c.; Nos. 9 and 10 blue annealed sheets, 1.40c.; No. 28 tin mill black plate, H. R. and A., 1.90c. to 1.95c.; Nos. 29 and 30, 1.95c. to 2c. These prices are f.o.b. Pittsburgh, in carload and larger lots, jobbers charging the usual advances for small lots from store.

**Tin Plate.**—Specifications against contracts continue active. This week the American Sheet & Tin Plate Company is operating to about 96 per cent. of its hot mill capacity. The Jones & Laughlin Steel Company is operating all of its 24 hot mills at Aliquippa, and has specifications ahead for some months. New buying is light. On the small amount of new business going, we quote 100 lb. cokes at \$3.30 to \$3.40 and 100-lb. ternes at \$3.20 to \$3.30, per base box, f.o.b. Pittsburgh.

**Wire Products.**—Specifications against contracts are showing a marked falling off, while the demand is small. Little business in wire nails was done on the \$1.60 basis or in plain wire at the \$1.40 basis, and it is said that in some cases contracts have been expanded that were taken at \$1.55 for wire nails and \$1.35 for plain wire. On new orders, we quote: Wire nails, \$1.60; plain annealed wire, \$1.40; galvanized barb wire and fence staples, \$2; painted barb wire, \$1.60, all per 100 lb., f.o.b. Pittsburgh, with actual freight charge to point of delivery, terms being 30 days net less 2 per cent.

off for cash in 10 days. We quote cut nails at \$1.65, f.o.b. Pittsburgh. Discounts on woven wire fencing are 73 1/2 per cent. off in carload lots, 72 1/2 per cent. off on 1000-rod lots and 71 1/2 per cent. on less than 1000-rod lots, all f.o.b. Pittsburgh.

**Hoops and Bands.**—Nearly all consumers being covered up to July 1 the new demand is very light on both hoops and bands, and specifications are not coming in at an active rate. We quote steel bands at 1.15c. to 1.20c., with extras as per the steel bar card, and steel hoops at 1.25c., f.o.b. Pittsburgh.

**Shafting.**—Makers report the new demand quiet and only for small lots. Specifications against contracts are not satisfactory. The automobile builders and implement makers are not specifying for the quantities that they usually take out at this time of the year. We quote cold-rolled shafting in carload and larger lots at 64 to 65 per cent. off, and in small lots from 61 to 63 per cent. off, delivered in base territory, depending on the order.

**Spikes.**—No large inquiries are in the market from railroads. Indications are that the consumption of railroad spikes this year will be much less than expected. We quote standard sizes of railroad spikes at \$1.45, and small railroad and boat spikes at \$1.55, per 100 lb., f.o.b. Pittsburgh.

**Merchant Steel.**—Most jobbers have fairly heavy stocks on hand, and specifications against contracts are only fair. The new demand is only for small lots. With the advent of good weather, it is expected that the demand for seasonable steels will show an increase. On desirable orders prices are being shaded. We quote: Iron finished tire, 1/2 x 1 1/2 in. and larger, 1.35c., base; under 1/2 x 1 1/2 in., 1.50c.; planished tire, 1.55c.; channel tire, 3/4 to 7/8 and 1 in., 1.85c. to 1.95c.; 1 1/2 in. and larger, 1.95c.; toe calk, 1.95c. to 2.05c., base; flat sleigh shoe, 1.70c.; concave and convex, 1.75c.; cutter shoe, tapered or bent, 2.25c. to 2.35c.; spring steel, 1.95c. to 2.05c.; machinery steel, smooth finish, 1.80c. We quote cold-rolled strip steel as follows: Base rates for 1 in. and 1 1/2 in. and wider, under 0.20 carbon, and No. 10 and heavier, hard temper, 3.25c.; soft, 3.50c.; coils, hard, 3.15c.; soft, 3.40c.; freight allowed. The usual differentials apply for lighter sizes.

**Coke.**—Conditions in the coke trade are unsatisfactory. No new demand is coming out for furnace coke, and unless trade in pig iron soon improves a number of furnaces in the valleys will probably bank or go out, and the consumption of coke will fall off further. Prices are not so strong as they were. Best grades of furnace coke for April delivery and probably through second quarter can be bought readily at \$2 per net ton at oven, with some grades offered at \$1.90 to \$1.95. Little demand is experienced for foundry coke. We quote standard makes of furnace coke for April delivery at \$1.85 to \$1.90, but several leading makers are still holding for \$2 per net ton at oven. Standard 72-hr. foundry coke to consumers has sold at about \$2.50 at oven, but some grades are being sold at a less price. The Connellsville Courier reports the output of coke in the Upper and Lower Connellsville regions for the week ended March 28 as 360,018 net tons, a falling off over the previous week of 4062 tons.

**Old Material.**—The scrap trade is about as dull as possible. Large consumers do not seem to be interested in material at any price. The scrap lists of the Pennsylvania, Baltimore & Ohio and Erie railroads closed last week, and the material in these lists was pretty well distributed among dealers. Some of the heavy steel scrap on the Pennsylvania Railroad list was sold on the basis of \$11.85, Pitcairn, Pa., or \$12.15 delivered to consumers' mills in the Pittsburgh district. Compressed side and end sheet scrap is particularly weak, as a great deal is being offered. This is also true of low phosphorus melting scrap, of which more is being offered than wanted. We note sales of 1000 to 1500 tons of heavy steel scrap at \$12 delivered to consumers' mills, but dealers have bought at a lower price. We also note sales of 400 tons of low phosphorus melting stock at \$14, delivered. Dealers have lowered prices on some

**DEWEESCHER & SONS,**  
Mechanical and Civil Engineers,  
PITTSBURGH, PA.

grades of scrap, and are now quoting as follows, per gross ton, for delivery to consumers' mills in the Pittsburgh and nearby districts:

Selected heavy steel scrap, Steubenville, Follansbee, Brackenridge, Sharon, Monessen, Midland and Pittsburgh delivery .....	\$12.00	
Compressed side and end sheet scrap .....	\$11.00 to	11.25
No. 1 foundry cast .....	11.50 to	11.75
No. 2 foundry cast .....	10.25 to	10.50
Bundled sheet scrap, f.o.b. consumers' mills, Pittsburgh district .....	8.25 to	8.50
Re-rolling rails, Newark and Cambridge, Ohio, Cumberland, Md., and Franklin, Pa. ....	12.75 to	13.00
No. 1 railroad malleable stock .....	11.00 to	11.25
Railroad grate bars .....	10.25 to	10.50
Low phosphorus melting stock .....	14.00 to	14.25
Iron car axles .....	22.50 to	23.00
Steel car axles .....	15.50 to	16.00
Locomotive axles, steel .....	20.00 to	20.50
No. 1 busheling scrap .....	10.25 to	10.50
No. 2 busheling scrap .....	7.25 to	7.50
Machine shop turnings .....	7.50 to	7.75
Old carwheels .....	11.25 to	11.50
Cast-iron borings .....	7.75 to	8.00
Sheet bar crop ends .....	12.00 to	12.25
Old iron rails .....	13.75 to	14.00
No. 1 railroad wrought scrap .....	11.50 to	11.75
Heavy steel axle turnings .....	8.50 to	8.75
Heavy breakable cast scrap .....	12.00 to	12.25

\*Shipping point.

## Chicago

CHICAGO, ILL., April 8, 1914.—(By Wire.)

In point of tonnage, the award of a contract for 3700 tons of steel for the Heyworth Building and the placing of 2000 cars by the Chicago & Northwestern are the transactions of greatest importance openly reported the past week. At the mills the sheared plate situation has been slightly relieved by the receipt of a round tonnage of plates for cars recently bought. Reports are also current of a quiet inquiry for locomotives from Western railroads. Further than this, little change can be noted. In general, mill shipments hold up well on the basis of contracts on the books, from which fact it is apparent that the buying in January and February was not speculative to any great extent, but the paucity of new business continues to loom larger in the foreground. Further tendencies toward weakness in prices bear witness to this fact. Structural shapes and steel bars at 1.38c., Chicago, and plates at 1.33c., are asking prices for ordinary business. Sheets are now generally quotable at 1.90c. and 2.90c., Pittsburgh, for black and galvanized respectively. The makers of bar iron are showing more indifference where the taking of business involves quoting below cost, and prices are not as low as they have been. The pig-iron and scrap markets are entirely lacking in interesting features.

**Pig Iron.**—To report the most favorable phase of the pig-iron situation with respect to the Lake furnaces, one must turn to shipments. Although the foundries unquestionably bought iron early in the year from 25 to 30 per cent. in excess of their requirements, local furnaces, with nearly 50 per cent. of capacity out of blast, are shipping fully as much tonnage as they are making. This fact is largely responsible for the steadiness with which the price of Northern iron is being held. New inquiry and new business are too light to even suggest strength. In the South the stocks of iron on hand make the question of prices for the next quarter, or even for the remainder of this half of the year, problematical, but for the present \$10.50, Birmingham, can be done for April and May delivery. The following quotations are for iron delivered at consumers' yards, except those for Northern foundry, malleable Bessemer and basic iron, which are f.o.b. furnace and do not include a local switching charge averaging 50c. a ton:

Lake Superior charcoal .....	\$15.25 to	\$16.25
Northern coke foundry, No. 1 .....	14.75 to	15.00
Northern coke foundry, No. 2 .....	14.25 to	14.75
Northern coke foundry, No. 3 .....	14.00 to	14.25
Southern coke, No. 1 f'dry and 1 soft .....	15.35 to	15.85
Southern coke, No. 2 f'dry and 2 soft .....	14.85 to	15.35
Southern coke, No. 3 .....	14.35 to	14.85
Southern coke, No. 4 .....	13.85 to	14.35
Southern gray forge .....	13.35 to	13.85
Southern mottled .....	13.10 to	13.35
Malleable Bessemer .....	14.25 to	14.50
Standard Bessemer .....	17.00	
Basic .....	13.75 to	14.25
Jackson Co. and Ky. silvery, 6 per cent. ....	16.90 to	17.40
Jackson Co. and Ky. silvery, 8 per cent. ....	17.90 to	18.40
Jackson Co. and Ky. sil'vy, 10 per cent. ....	18.90 to	19.40

(By Mail)

**Rails and Track Supplies.**—No change is reported in the railroad situation. In some cases where contracts were placed a number of weeks ago specifications are still lacking. In their spike and track bolt departments the mills have very little to do. We quote standard railroad spikes at 1.50c. to 1.55c., base; track bolts with square nuts, 2c. to 2.10c., base, all in carload lots, Chicago; tie plates, \$26 to \$28 net ton; standard section Bessemer rails, Chicago, 1.25c., base; open hearth, 1.34c.; light rails, 25 to 45 lb., 1.25c.; 16 to 20 lb., 1.30c.; 12 lb., 1.35c.; 8 lb., 1.40c.; angle bars, 1.50c., Chicago.

**Structural Material.**—The contract for the Heyworth building, Chicago, awarded to the American Bridge Company and carrying about 3700 tons, was the most important transaction in fabricated steel during the week. Other lettings totaled about 1000 tons. The Rockford Gas Light & Coke Company, Rockford, Ill., contracted for 242 tons for miscellaneous requirements; the Virginia Bridge & Iron Company will furnish 162 tons for the Frisco Railroad; a theater at Seattle will take 216 tons; the Vulcan Iron Works will fabricate 330 tons for car ferry slips at San Francisco, and the Brode Iron Works took 100 tons for a hotel building for the Peninsular Realty Company, also at San Francisco. For plain material the mills are still quoting 1.20c., Pittsburgh, wherever that price is likely to take the business, but desirable specifications are not attracted by this price. We continue to quote for Chicago delivery from mill 1.33c. to 1.38c.

We quote for structural shapes, for Chicago delivery, out of store, 1.75c.

**Plates.**—Orders for plates to go into car construction and aggregating about 10,000 tons reached the mills during the week. As a result those who were favored find their rolling schedules somewhat improved. But with quotations of 1.15c., Pittsburgh, not uncommon, it is certain that this car business was not secured at very profitable prices. The Pullman Company secured the order for 2000 box cars from the Chicago & Northwestern. These cars will have steel underframes of built-up construction requiring a fair tonnage of plates. Tank plate business is of little volume. For Chicago delivery from mill we quote 1.33c.

For Chicago delivery of plates, out of store, we quote, 1.75c.

**Sheets.**—At Chicago the mills are in no immediate need of sheet business. In fact deliveries are not being promised much in advance of June 1. However, shipments are running ahead of the booking of new business to such an extent that quotations of 2.18c. and 3.18c. for black and galvanized sheets, which obtained in some quarters up to the last few days, have given way to prices \$2 a ton lower. These lower prices represent the basis upon which the more hungry mills have been seeking tonnage. We quote for Chicago delivery from mill: No. 10 blue annealed, 1.58c.; No. 28 black, 2.08c. to 2.13c.; No. 28 galvanized, 3.08c. to 3.13c.

For sheets out of store we quote for Chicago delivery as follows, minimum prices applying on bundles of 25 or more: No. 10 blue annealed, 1.95c.; No. 28 black, 2.45c. to 2.55c.; No. 28 galvanized, 3.50c. to 3.60c.

**Bars.**—The mills continue unwilling to make extreme concessions to secure bar-iron tonnage and 1.15c. is now a less common quotation, ordinary business going at 1.17½c. The taking of any considerable business would only necessitate the buying of scrap, thus helping to hold up that market against a low price for bars. The steel bar situation is unchanged. Reinforcing bars are in good demand. We quote for mill shipments as follows: Bar iron, 1.15c. to 1.20c.; soft steel bars, 1.38c.; hard steel bars, 1.30c.; shafting in carloads, 65 per cent. off; less than carloads, 60 per cent. off.

We quote store prices for Chicago delivery: Soft steel bars, 1.65c.; bar iron, 1.65c.; reinforcing bars, 1.65c. base, with 5c. extra for twisting in sizes ½ in. and over and usual card extras for smaller sizes; shafting 60 per cent. off.

**Hoops and Bands.**—The trade in hoops and bands is not escaping the accompaniment of light business, and concessions in prices mark the greater number of quotations where desirable specifications are involved. We quote for Western delivery for bands 1.33c. to 1.38c., and for hoops 1.43c. to 1.48c.

**Rivets and Bolts.**—Any increase of business in rivets is so rapidly absorbed in the excess of manufacturing capacity in this market as to be difficult of detection. Some improvement is noted, however. The demand for bolts and nuts is perfunctory. We quote from mill as follows: Carriage bolts up to  $\frac{3}{4}$  x 4 in., rolled thread, 80-5; cut thread, 80; larger sizes, 75-5; machine bolts up to  $\frac{3}{4}$  x 4 in., rolled thread, 80-10; cut thread, 80-5; larger sizes, 75-10; coach screws, 80-15; hot pressed nuts, square head, \$6.20 off per cwt.; hexagon, \$7 off per cwt. Structural rivets,  $\frac{1}{2}$  to  $1\frac{1}{4}$  in., 1.73c. to 1.78c., base, Chicago, in carload lots; boiler rivets, 10c. additional.

We quote out of store: Structural rivets, 2.35c.; boiler rivets, 2.55c.; machine bolts up to  $\frac{3}{4}$  x 4 in., 75-10; larger sizes, 70-10-5; carriage bolts up to  $\frac{3}{4}$  x 6 in., 75-5; larger sizes, 70-10 off; hot pressed nuts, square head, \$6.00, and hexagon, \$6.70 off per cwt.

**Wire Products.**—Specifications against contracts placed earlier in the year are still coming into the mills in fair volume, but, with respect to new business, the situation is far from satisfactory. Wire nails are holding up moderately well, but without the seasonable demand for special products like wire rope and poultry netting, the finishing mills would find their operating schedules rather light. Prices are not being seriously questioned. We quote to jobbers as follows: Plain wire No. 9 and coarser, base, \$1.58; wire nails, \$1.78; painted barb wire, \$1.78; galvanized, \$2.18; polished staples, \$1.78; galvanized, \$2.13, all Chicago.

**Cast-Iron Pipe.**—In addition to the contract placed last week, Cincinnati has taken figures on 2100 tons of pipe for which the United States Cast Iron Pipe & Foundry Company is low bidder. It seems probable that the same company will be awarded 7500 tons, to be let at Cleveland. Bids are being taken by Highland Park, a suburb of Detroit, on 61,000 ft. of 36 in. pipe, which if placed for cast-iron pipe, will call for about 15,000 tons. We quote as follows, per net ton, Chicago: Water pipe, 4 in., \$26; 6 to 12 in., \$24; 16 in. and up, \$23.50, with \$1 extra for gas pipe.

**Old Material.**—Except for such purchases as are necessary for the maintenance of stock reserves, the rolling mills are staying out of the market. At the same time dealers seem to have taken a somewhat firmer position on wrought scrap and on recent sales, not covered by old orders, it has been impossible to do better than \$9. Foundry grades and steel scrap are not quite so firmly held, but no changes of importance are to be noted. The Chicago, Milwaukee & St. Paul is offering 1000 tons of old material on a list to be closed this week. We quote, for delivery at buyers' works, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton	
Old iron rails	\$12.75 to \$13.25
Old steel rails, rerolling	11.50 to 12.00
Old steel rails, less than 3 ft.	10.50 to 11.00
Relaying rails, standard section, subject to inspection	24.00
Old carwheels	11.50 to 12.00
Heavy melting steel scrap	9.50 to 10.00
Frogs, switches and guards, cut apart	9.75 to 10.00
Shoveling steel	9.00 to 9.25
Steel axle turnings	6.75 to 7.25

Per Net Ton	
Iron angles and splice bars	\$12.25 to \$12.75
Iron arch bars and transoms	12.25 to 12.75
Steel angle bars	8.75 to 9.25
Iron car axles	17.50 to 18.00
Steel car axles	12.50 to 13.00
No. 1 railroad wrought	9.00 to 9.25
No. 2 railroad wrought	8.50 to 9.00
Cut forge	8.00 to 8.50
Steel knuckles and couplers	9.00 to 9.50
Steel springs	9.50 to 10.00
Locomotive tires, smooth	10.00 to 10.25
Machine shop turnings	4.75 to 5.25
Cast borings	4.50 to 5.00
No. 1 busheling	7.50 to 8.00
No. 2 busheling	6.00 to 6.50
No. 1 boilers, cut to sheets and rings	6.50 to 7.00
Boiler punchings	9.25 to 9.75
No. 1 cast scrap	10.25 to 10.50
Stove plate and light cast scrap	9.25 to 9.75
Grate bars	9.00 to 9.50
Railroad malleable	9.00 to 9.50
Agricultural malleable	8.25 to 8.75
Pipes and flues	6.75 to 7.25

The Adrian Steel Castings Company, Adrian, Mich., is establishing a new department to make concrete block machinery. It will this summer build a machine shop, 50 x 100 ft., its recent increase in capital stock being for this purpose.

## Philadelphia

PHILADELPHIA, PA., April 7, 1914.

In the heavier lines of finished products new business continues to come forward in a halting way, the lighter products being the more active. Mill representatives are hopeful, despite the weakness which has developed in plates, shapes and bars. At least one good proposition in structural material is nearing placement here. Pig iron is very dull, but the statistics are strong. Scrap material is dependent for activity on a revival of demand for finished products.

**Iron Ore.**—The market continues extremely quiet, awaiting the fixing of Lake ore prices. It is predicted that should the present level be maintained, or reduced but slightly, foreign importations will be stimulated, whereas in the event of a substantial reduction imports will be lessened. Imports in the week ended April 4 were 12,400 tons from Cuba and 6197 tons from Sweden.

**Pig Iron.**—Interest on the part of buyers has not improved; inquiries are few and the market, if changed at all, is a trifle quieter, but counteracting this condition is the fact that stocks at Eastern blast furnaces were reduced 80 per cent. in March and are now at the lowest point since last summer. It therefore is evident that, while general sentiment indicates weakness, the situation is good in a statistical way. The best sale reported is one of several thousand tons of malleable iron for shipment to New England at a price described as good. A local locomotive building plant which had an inquiry out for 1000 tons of cylinder iron of special analysis is understood to have closed for about double that amount. Such orders as have been placed for eastern Pennsylvania No. 2 X and No. 2 plain have been those which come with usual regularity from small consumers. Two of the large makers of cast-iron pipe, while not in urgent need of iron, continue on the lookout for cheap lots. A few carloads of standard low phosphorus have been sold at \$21, delivered. In gray forge and basic extreme quiet has prevailed. One basic maker has no iron to sell for the first half, having oversold in the big movement of a few weeks ago. The quotations for Northern iron show little or no weakness at \$15 to \$15.25, delivered, for eastern Pennsylvania No. 2 X, and some sellers are holding for \$15.50, though at least one of them admits that he does not expect to get that figure easily. The only break in price mentioned concerns a Virginia iron for which, according to report, \$12.50, furnace, would be taken. The generally accepted price of Virginia No. 2 X foundry and No. 2 plain is \$12.75, furnace, equal to \$15.55 to \$15.75, delivered here. In March, one Virginia furnace shipped about 80 per cent. of its production for the month. Its agents here find buyers cautious, most of them taking iron only for current needs and in a few cases asking that delivery on contract be at least partially deferred. The following range of prices about represents the market for near future delivery in buyers' yards in this district:

Eastern Penna. No. 2 X foundry	\$15.00 to \$15.25
Eastern Penna. No. 2 plain	14.75 to 15.00
Virginia No. 2 X foundry	15.55 to 15.75
Virginia No. 2 plain	15.55 to 15.75
Gray forge	14.00
Basic	14.25
Standard low phosphorus	21.00

**Ferroalloys.**—The only business reported in 80 per cent. ferromanganese is the sale of two or three carload lots for prompt delivery at the full price of \$39, Baltimore. German ferromanganese is unchanged at \$38, Baltimore. The quotations for ferrosilicon continue at \$71 to \$73, Pittsburgh, for 50 per cent. and \$24.30 delivered for 11 per cent.

**Cast-Iron Pipe.**—A slight lull has followed the better inquiry of two or three weeks ago, but it is not regarded as really affecting the rather good status of the market. Quotations are unchanged at \$21.50 per net ton, standard weight, in carload lots at the foundry for 6-in. pipe, with 4-in. \$2 higher and larger sizes 50c. less.

**Billets.**—Eastern Pennsylvania mills continue to run on one turn, with specifications coming out steadily but in a volume that assures operation at this rate

only a few days ahead. Prices show no change at \$23.40 to \$24.40 for open-hearth rolling billets, with forging steel at an advance of \$4 to \$5 per ton.

**Plates.**—Operations of the mills in this territory continue to be held up by small and moderate-sized miscellaneous orders. Makers are still getting 1.20c., Pittsburgh, or 1.35c., Philadelphia, for carloads, but for more desirable business 1.15c., Pittsburgh, or lower, can be done. The Newport News Shipbuilding & Dry Dock Company has taken a contract for building a collier which will require between 1200 and 1500 tons of plates.

**Structural Material.**—Business is so dull that prices have not been seriously tested, but it is conceded that 1.15c., Pittsburgh, can be easily obtained by buyers, and it is hard to say just what a highly desirable proposition would bring out. While orders are not being recorded to any greater extent, there is more to talk about, with the interest principally in the building which the Bell Telephone Company is to erect in this city and for which the contract is soon to be placed. It will require about 4000 tons of material. The collier which the Newport News Shipbuilding & Dry Dock Company is to build will require about 1000 tons of shapes. It has been definitely settled that the new building of the Board of Home Missions of the Methodist Episcopal Church will be six stories and will require between 500 and 600 tons of material. It is to be so constructed that six stories can be added when so desired. This proposition has lost general interest since it became known that Bethlehem shapes are to be used. The building will cost \$225,000. Other prospects are high schools in Germantown and Frankford. The plant of the Taylor-Wharton Iron & Steel Company, Easton, Pa., is again being mentioned.

**Bars.**—The demand is even more quiet, but prices are without change at 1.22½c. to 1.25c., delivered for iron bars. Steel bars in good-sized lots can be more generally had at 1.15c., Pittsburgh, or 1.30c., delivered, but the volume of orders is small and 1.35c. delivered is obtained for the ordinary run of business. The agricultural implement makers are entering their off season as consumers, but concrete reinforcing bars are gaining in activity. In carload lots they command 1.35c., Philadelphia, with larger quantities at 1.30c.

**Sheets.**—Makers still find specifications coming forward to meet the week to week needs of consumers, but the total of business is good. For No. 10 blue annealed sheets 1.55c., Philadelphia, is the quotation.

**Old Material.**—The market is devoid of activity and without feature. The attitude of the sellers is one of waiting, as they believe that a revival of new business with the mills must precede any good increase of activity with them. They express confidence that prices are at or near the bottom. The following quotations about represent the market for deliveries in buyers' yards in this district, covering eastern Pennsylvania and taking freight rates varying from 35c. to \$1.35, per gross ton:

No. 1 heavy melting steel.....	\$11.00 to \$11.25
Old steel rails, rerolling.....	13.00 to 13.50
Low phosphorus heavy melting steel scrap .....	14.50 to 15.00
Old steel axles.....	15.25 to 15.75
Old iron axles.....	21.00 to 22.00
Old iron rails (nominal).....	15.50 to 16.00
Old carwheels.....	12.00 to 12.50
No. 1 railroad wrought.....	13.25 to 13.75
Wrought-iron pipe.....	10.50 to 11.00
No. 1 forge fire.....	8.50 to 9.00
Bundled sheets.....	8.50 to 9.00
No. 2 light iron.....	5.00
No. 2 busheling.....	8.00 to 8.50
Wrought turnings.....	8.00 to 8.50
Cast borings.....	8.50 to 8.75
Machinery cast.....	13.00 to 13.50
Grate bars, railroad.....	8.50 to 9.00
Stove plate.....	9.00 to 9.50
Railroad malleable.....	9.00 to 9.50

**Coke.**—Connellsville furnace for prompt delivery is still quoted at \$1.90 to \$2 per net ton at oven, and on contract \$2 to \$2.10, but there is less inclination to ask over \$2. Connellsville foundry coke can be had at \$2.40 to \$2.50 per net ton at oven, with some grades running higher. Freight rates from the producing districts are as follows: Connellsville, \$2.05; Mountain, \$1.65; Latrobe, \$1.85.

## Cleveland

CLEVELAND, OHIO, April 7, 1914.

**Iron Ore.**—Ore shipments from Lake Erie docks in March were 820,741 tons, being the lowest in three years. On April 1 there was 6,925,678 tons on the docks as compared with 6,728,035 tons a year ago and 7,032,925 two years ago. Some of the ore salesmen who have been calling on the blast furnacemen in the past week find that the latter are as yet unwilling to consider purchases of ore and there is nothing to indicate an immediate buying movement. We quote 1913 prices as follows: Old range Bessemer, \$4.40; Mesaba Bessemer, \$4.15; old range non-Bessemer, \$3.50; Mesaba non-Bessemer, \$3.40.

**Pig Iron.**—The only inquiry of any size is from the United Steel Company, Canton, for 3000 tons of basic for the second quarter delivery. No foundry iron sales are reported, with the exception of a few small lots. Some foundrymen who have taken contracts for castings for the last half delivery have made inquiry for last half foundry iron, but in view of the fact that furnaces are still asking an advance in prices for the second half they have decided to postpone buying. While most furnaces are shipping all the iron they are making some are adding considerably to their stock piles. With the absence of attractive inquiries prices are being maintained at the \$14 basis by local furnaces. Southern iron is dull and weak. Small lots are selling at \$10.50, Birmingham. We quote delivery Cleveland as follows:

Bessemer.....	\$14.90
Basic.....	\$13.90 to 14.00
Northern No. 2 foundry.....	14.25
Southern No. 2 foundry.....	14.85 to 15.10
Gray forge.....	13.50
Jackson Co. silvery, 8 per cent. silicon.....	17.55

**Coke.**—A Cleveland furnace interest purchased 6600 tons of furnace coke for April shipment at \$1.75. The market is not firm. Standard makes are generally being held at \$1.85 to \$2. Foundry coke is very dull and some consumers are holding back on shipments. We quote Standard Connellsville foundry coke at \$2.50 to \$2.75, but some makes are being offered as low as \$2.35.

**Finished Iron and Steel.**—There is a limited buying of small lots and specifications are light. Generally the situation shows little change, although there is an improvement in inquiry for structural material for work that will be placed within the next few weeks. While steel bars are offered at 1.15c. most of the business going is in small lots which are being placed at 1.20c. and mills seem disposed to resist firmly efforts of buyers to force the price below 1.15c. Plates are generally quoted at 1.15c. Structural material is being maintained at 1.20c. for small lots. The Massillon Bridge Company has taken 225 tons for an addition to the plant of the Massillon Rolling Mill Company and the latter company's new open-hearth steel plant will require about 2000 tons. Other building work and bridges on which fabricators in this territory are now figuring will require 4000 tons or more of steel. The demand for sheets shows an improvement, but prices continue irregular. For early delivery quotations of 1.90c. for No. 28 black and 2.90c. for No. 28 galvanized are being made, but there are reports of shading of these prices \$1 a ton for prompt shipment. Bar iron continues very dull with quotations at 1.20c. to 1.25c. We quote warehouse prices at 1.80c. for steel bars, 1.75c. for iron bars and 1.90c. for plates and structural material.

**Bolts and Rivets.**—Bolt and nut specifications are fair and most makers are adhering to regular prices. Jobbers are reported to be doing less price cutting than they were recently, owing to the depletion of their low-priced stock. Rivet specifications have improved, but prices are weak. We quote structural rivets at 1.55c. and boiler rivets at 1.65c. for desirable orders. We quote discounts as follows: Common carriage bolts, ¾ x 6 in. smaller or shorter, rolled thread, 80 and 5 per cent.; cut thread, 80 per cent.; larger or longer, 75 and 5 per cent.; machine bolts with h.p. nuts, ¾ x 4 in. smaller or shorter, rolled thread, 80 and 10 per cent.; cut thread, 80 and 5 per cent.; larger or longer, 75 and 10 per cent.; coach and lag screws, 80 and 15 per cent.; square h.p. nuts, blank or tapped, \$6.30 off; hexagon h.p. nuts, blank or tapped, \$7.20 off; c. p. c. and t. square

nuts, blank or tapped, \$6 off; hexagon,  $\frac{5}{8}$  in. and larger, \$7.20 off; 9-16 in. and smaller, \$7.80 off; semi-finished hexagon nuts,  $\frac{5}{8}$  in. and larger, 85, 10 and 5 per cent.; 9-16 in. and smaller, 85, 10, 10 and 5 per cent.

**Old Material.**—An unusually large tonnage of scrap was offered by the railroads in the week and was sold at low prices. A list put out by the Lake Shore Railroad was withdrawn. The extreme dullness continues, there being little buying by the mills and few transactions between dealers. The embargo at the Upson plant continues and the local rolling mills are holding back on shipments. Prices are unchanged. We quote f.o.b. Cleveland as follows:

Per Gross Ton	
Old steel rails, rerolling.....	\$11.50 to \$12.00
Old iron rails .....	13.50 to 14.00
Steel car axles .....	15.00 to 15.25
Heavy melting steel .....	10.50 to 11.00
Old carwheels .....	11.50 to 12.00
Relaying rails, 50 lb. and over.....	23.00 to 25.00
Agricultural malleable .....	8.50 to 9.00
Railroad malleable .....	10.75 to 11.00
Light bundled sheet scrap .....	7.50 to 8.00

Per Net Ton	
Iron car axles .....	\$18.00 to \$19.00
Cast borings .....	5.75 to 6.00
Iron and steel turnings and drillings.....	5.25 to 5.50
Steel axle turnings .....	6.75 to 7.25
No. 1 busheling, new .....	8.75 to 9.00
No. 1 busheling, old .....	8.00 to 8.25
No. 1 railroad wrought .....	10.00 to 10.50
No. 1 cast .....	10.75 to 11.00
Stove plate .....	8.75 to 9.00

## Cincinnati

CINCINNATI, OHIO, April 7, 1914.—(By Wire.)

**Pig Iron.**—The market is featureless. The only new inquiry reported is one from central Indiana calling for a limited tonnage of Southern iron. Practically all iron merchants here state that the past three weeks have constituted a period not equaled in the history of the trade, as far as new business is concerned. Specifications on old contracts are said to be satisfactory, and only in a few instances have requests been made to delay shipments. This is the only redeeming feature of the present market, with the possible exception of a small curtailment in production in the South due to two furnaces blowing out for relining. Southern No. 2 foundry is openly quoted at \$10.50, Birmingham basis, for prompt shipment, and it is rumored that offers at the same figure for shipment through the third quarter would be acceptable. Sellers are not making any effort to force the issue and apparently have assumed the Micawberlike attitude of buyers. Several experienced pig-iron dealers state that the present unprecedented lull portends an active buying movement that may come at any time. However, there is nothing in sight to justify this prophecy further than that many consumers of foundry iron have not covered for last half requirements and quite a number will need a supply to operate through the second quarter. Northern furnaces are holding firmly at \$13.50, Iron-ton, but are making no sales of consequence. A few small sales of Ohio silvery iron have been consummated at \$16 at furnace for nearby shipment. Based on freight rates of \$3.25 from Birmingham and \$1.20 from Iron-ton, we quote f.o.b. Cincinnati, as follows:

Southern coke, No. 1 f'dry and 1 soft.....	\$14.25 to \$14.75
Southern coke, No. 2 f'dry and 2 soft.....	13.75 to 14.25
Southern coke, No. 3 foundry.....	13.25 to 13.75
Southern No. 4 foundry.....	12.75 to 13.25
Southern gray forge .....	12.25 to 12.75
Ohio silvery, 8 per cent. silicon.....	17.20 to 17.70
Southern Ohio coke, No. 1.....	15.70 to 16.20
Southern Ohio coke, No. 2.....	14.70 to 15.20
Southern Ohio coke, No. 3.....	14.45 to 14.70
Southern Ohio malleable Bessemer.....	14.70 to 15.20
Basic, Northern .....	14.70 to 15.20
Lake Superior charcoal .....	16.25 to 17.25
Standard Southern carwheel.....	27.25 to 27.75

(By Mail)

**Coke.**—A southern Ohio furnace is reported to have purchased approximately 45,000 tons of Pocahontas coke to supply it through the present year. Connells-ville prices are unchanged on both furnace and foundry coke, but it is now possible to contract for 48-hr. brands as low as \$1.90 for shipment over the next three months. The regular contract quotation is \$2 per net ton at oven. Pocahontas and Wise County furnace brands are now getting nearer the prices quoted on Connells-ville coke, and the usual differential

has been cut down to about 10c. a ton premium. Foundry coke is slow, shipments on contracts being held up while new business is scarce. Leading 72-hr. brands can be obtained around \$2.50 to \$2.75 per net ton at oven in all three producing districts.

**Finished Material.**—The expected improvement in the demand for structural material has only partly materialized. Weather conditions have held up building operations to some extent, and the general business situation is not encouraging enough for large contractors to take care of their future wants. On the other hand, both galvanized and black sheets are in better demand for nearby shipment. Specifications on previous contracts also show some improvement. We quote No. 28 black sheets at 2.10c. to 2.15c., f.o.b. Cincinnati and Newport, Ky., and galvanized sheets 3.10c. to 3.15c. Steel bars from warehouse stocks are unchanged at 1.75c. and structural shapes at 1.85c. Car-load orders from store stocks could probably be placed at lower figures.

**Old Material.**—No new developments can be reported. With pig iron at its present low level, it is a hard matter for dealers and consumers to forecast when the market will improve. There is little demand, except from a few foundries to fill urgent requirements. The minimum figures given below represent what dealers are willing to pay for delivery in their yards, southern Ohio and Cincinnati, and the maximum quotations are dealers' prices f.o.b. at yards:

Per Gross Ton	
Bundled sheet scrap.....	\$7.00 to \$7.50
Old iron rails .....	12.00 to 12.50
Relaying rails, 50 lb. and up.....	20.00 to 20.50
Rerolling steel rails.....	11.00 to 11.50
Melting steel rails .....	9.50 to 10.00
Old carwheels .....	10.50 to 11.00

Per Net Ton	
No. 1 railroad wrought .....	\$9.00 to \$9.50
Cast borings .....	4.75 to 5.25
Steel turnings .....	4.75 to 5.50
Railroad cast scrap .....	9.50 to 10.00
No. 1 machinery cast scrap.....	10.50 to 11.50
Burnt scrap .....	6.25 to 7.00
Old iron axles .....	17.00 to 17.50
Locomotive tires (smooth inside).....	10.00 to 10.50
Pipes and flues .....	6.50 to 7.00
Malleable and steel scrap.....	7.50 to 8.00
Railroad tank and sheet scrap.....	5.50 to 6.00

## Birmingham

BIRMINGHAM, ALA, April 6, 1914.

**Pig Iron.**—The extreme depth of dullness has been reached in the local iron trade. One hears of small sales of spot in southern territory at \$11, but no considerable tonnage appears to have recently changed hands. The nominal quotation is \$11, but it is reported that as low as \$10.50 has been offered by furnace operators without resulting in contracts. Any amount of iron for competitive territory, either for spot or third quarter, could be secured on a \$10.75 basis. However, the price is not what is counting now so much as the absolute indifference of the buying trade. There are few inquiries. The manufacturers have never been so unanimous in saying "nothing doing" as at this time, and none of them ventures to predict the end of the stagnation now existing. Probably nowhere in the country is the Underwood tariff more roundly criticised than in this, Mr. Underwood's own district. An official of a large concern said: "Foreign iron and steel are affecting us materially. Steel and iron bars from England are being landed at New Orleans cheaper than we can quote. German and Belgian billets are forcing us out of Philadelphia territory. Foreign iron has taken pipe-iron trade in New Jersey from us and foreign iron has even gotten into Cincinnati territory. Talk about the tariff not hurting us! It is hurting us right now, and hurting us badly." Other iron men talk along the same line. Even the demand for steel-making iron in Southern territory is not healthy. Steel plants are on about a 60 per cent. basis. We quote Birmingham pig iron, f.o.b. furnaces, per gross ton, as follows:

No. 1 foundry and soft.....	\$11.25 to \$11.50
No. 2 foundry and soft.....	10.75 to 11.00
No. 3 foundry .....	10.25 to 10.50
No. 4 foundry .....	10.00 to 10.25
Gray forge .....	9.75 to 10.00
Basic .....	10.50 to 11.00
Charcoal .....	23.50 to 24.00

**Cast-Iron Pipe.**—The manufacturers of soil pipe expect to be kept busy for some time and report prices up to the normal. The water and gas pipe makers are getting semi-satisfactory prices and are operating on good time without accumulating large stocks. We quote, per net ton, f. o. b. plants as follows: 4-in., \$21; 6-in. and upward, \$19, with gas pipe \$1 higher.

**Coal and Coke.**—Both coal and coke are in better form than for some time. While the steam coal trade has not picked up, the bunker business at New Orleans, Pensacola and Mobile is increasing and domestic yards are ordering stocks for storage. Coke, owing to the smaller output, finds a freer outlet. There has already been a resumption of the coke trade with the Pacific coast, shipments to Los Angeles taking place since the freight rate was reduced from \$10 to \$9 per ton. We quote, per net ton, f. o. b. oven, as follows: Furnace coke, \$2.50 to \$2.75; foundry, \$3.25 to \$3.50.

**Old Material.**—Trading is not active and prices are fluctuating. Outside of the light grades of cast and stove plate, there has been no feature. We quote, per gross ton, f. o. b. dealers' yards, as follows:

Old iron axles	\$14.50 to \$15.00
Old steel axles	14.50 to 15.00
Old iron rails	13.00 to 13.50
No. 1 railroad wrought	10.00 to 11.00
No. 2 railroad wrought	8.50 to 9.00
No. 1 country wrought	9.00 to 10.00
No. 2 country wrought	8.00 to 9.00
No. 1 machinery cast	9.50 to 10.00
No. 1 steel scrap	8.00 to 8.50
Tram carwheels	9.50 to 10.00
Standard carwheels	10.50 to 11.00
Stove plate	8.00 to 8.50

## Boston

BOSTON, MASS., April 7, 1914.

**Old Material.**—The market has receded somewhat in the past week. Steel scrap is in some demand, but rolling-mill grades are dull, and the prices of such material have dropped off. The quotations given below are based on prices offered by the large dealers to the producers and to the small dealers and collectors, per gross ton, carload lots, f. o. b. Boston and other New England points which take Boston rates from eastern Pennsylvania points. In comparison with Philadelphia prices the differential for freight of \$2.30 a ton is included. Mill prices are approximately 50c. a ton more than dealers' prices:

Heavy melting steel	\$8.25 to \$8.50
Low phosphorus steel	13.75 to 14.75
Old steel axles	13.25 to 13.75
Old iron axles	21.25 to 21.75
Mixed shafting	12.75 to 13.00
No. 1 wrought and soft steel	9.00 to 9.25
Skeleton (bundled)	5.75 to 6.25
Wrought-iron pipe	7.75 to 8.00
Cotton ties (bundled)	6.00 to 6.25
No. 2 light	3.75 to 4.25
Wrought turnings	5.00 to 5.50
Cast borings	5.00 to 5.50
Machinery, cast	11.25 to 11.50
Malleable	8.00 to 8.25
Stove plate	7.75 to 8.00
Grate bars	6.25 to 6.50
Cast-iron carwheels	11.00 to 11.25

## St. Louis

ST. LOUIS, Mo., April 6, 1914.

**Pig Iron.**—Consumers are taking very freely under their contracts and no requests to hold back shipments are being received. In fact there are orders to push shipments forward. The inquiry for 500 tons of high manganese iron has not yet been filled. Prices are well maintained and no quotations nor sales are made below \$11 for No. 2 Southern, Birmingham basis, and no figures are available for third quarter or last half. No. 2 X Chicago is steady in this market at \$14.25 at furnace and No. 2 Northern \$13 to \$13.50, Iron-ton basis.

**Coke.**—Sales continued in carload lots for special or immediate requirements. In consequence the figures quoted are perhaps a little out of line, at least from figures on large lots, being \$2.60 to \$2.75 per net ton at oven for best 72-hr. selected Connellsville, prompt to future delivery. Furnace coke is quoted at \$1.85 for 48-hr. Connellsville future delivery and \$2 for prompt shipment.

**Finished Iron and Steel.**—Inquiry gives no evidence of reduced prices being made for this territory. The fabricating shops report enough business coming out to keep them busy. In bars demand is only fair and invariably for quick shipment. Railroads are taking track fastenings more freely. Light rails are in better demand as a result of the situation in the coal district tributary to this market, particularly Illinois.

**Old Material.**—Aside from a little better feeling in relaying rails and some hope of a better future there is only discouragement reported by the scrap dealers. Consumers are only taking what they are actually contracted for and are somewhat hesitant about that. Supplies are on hand in large quantities and buyers are out of the market. We quote dealers' prices, f. o. b. St. Louis, as follows:

Per Gross Ton	
Old iron rails	\$10.75 to \$11.25
Old steel rails, re-rolling	10.50 to 11.00
Old steel rails, less than 3 feet	9.50 to 10.00
Relaying rails, standard section, subject to inspection	21.00 to 23.00
Old carwheels	9.75 to 10.25
No. 1 railroad heavy melting steel scrap	9.75 to 10.25
Shoveling steel	8.25 to 8.75
Frogs, switches and guards cut apart	9.75 to 10.25
Bundled sheet scrap	4.50 to 5.00

Per Net Ton	
Iron angle bars	\$10.25 to \$10.75
Steel angle bars	8.50 to 9.00
Iron car axles	16.75 to 17.25
Steel car axles	11.75 to 12.25
Wrought arch bars and transoms	11.25 to 11.75
No. 1 railroad wrought	7.75 to 8.25
No. 2 railroad wrought	7.50 to 8.00
Railroad springs	8.75 to 9.25
Steel couplers and knuckles	8.75 to 9.25
Locomotive tires, 42 in. and over, smooth	9.00 to 9.50
No. 1 dealers' forge	7.25 to 7.75
Mixed borings	3.25 to 3.75
No. 1 busheling	7.25 to 7.75
No. 1 boilers, cut to sheets and rings	5.50 to 6.00
No. 1 cast scrap	9.25 to 9.75
Stove plate and light cast scrap	7.75 to 8.25
Railroad malleable	7.50 to 8.00
Agricultural malleable	7.00 to 7.50
Pipes and flues	5.50 to 6.00
Railroad sheet and tank scrap	5.75 to 6.25
Railroad grate bars	6.75 to 7.25
Machine shop turnings	4.25 to 4.75

## Buffalo

BUFFALO, N. Y., April 7, 1914.

**Pig Iron.**—Inquiry is practically nil and new buying is at low ebb. The total placed in the week was for less than 2000 tons and a large portion of this was charcoal iron. The smallness of sales in foundry grades and malleable for the last two weeks beats all records for a like period in the Buffalo market in the last 15 or 20 years. The lack of buying seems to be a matter of comparative indifference to most producers, however, as they are well booked with business for first half delivery; and furnaces in this district are not seeking third quarter business at present prices. For second quarter delivery we quote as follows, f. o. b. Buffalo, furnaces charging approximately 25c. per ton additional for Buffalo city delivery to cover freight and switching:

No. 1 foundry	\$14.00 to \$14.25
No. 2 X foundry	13.50 to 14.00
No. 2 plain	13.25 to 13.75
No. 3 foundry	13.00 to 13.25
Gray forge	12.75 to 13.00
Malleable	13.75 to 14.25
Basic	13.75 to 14.25
Charcoal, regular brands and analysis	15.75 to 16.75
Charcoal, special brands and analysis	20.50

**Finished Iron and Steel.**—New orders and specifications have been very light. There is a feeling among selling interests that with the resumption of outside construction work another buying movement of fair volume will develop in the near future. Transactions demonstrate that 1.20c. is the general or nominal price on bars, plates and shapes, although it is thought that this price might be shaded on attractive specifications. The Lackawanna Steel Company has taken 500 tons of rails from the Cleveland Street Railway Company. The Buffalo Structural Steel Company was low bidder for the 150 tons for the Green Realty apartments, this city. Barker, Rose & Clinton, Binghamton, N. Y., have awarded several hundred tons of steel for their hardware store and warehouse to a Bethlehem, Pa., fabricator. The Citizens Trust Company building, Utica, 250

tons, went to the Howes Construction Company, New York City.

**Old Material.**—Heavy melting steel is moving a little more freely as the principal local consumer has lifted the embargo and is now accepting moderate tonnages. Otherwise the entire market is quite inactive. Borings and turnings are a trifle weaker and there is a tendency towards softer prices throughout the list. Dealers still entertain the hope that an era of better prices is not far ahead, awaiting favorable action in regard to the railroad rate increase. We quote as follows, per gross ton, f.o.b. Buffalo:

Heavy melting steel	\$10.00 to \$10.50
Low phosphorus steel	14.50 to 15.00
Boiler plate sheared	11.50 to 12.00
No. 1 railroad wrought scrap	11.00 to 11.50
No. 1 railroad and machinery cast scrap	11.50 to 12.00
Old steel axles	13.75 to 14.25
Old iron axles	21.50 to 22.00
Old carwheels	11.50 to 12.00
Railroad malleable	10.25 to 10.75
Machine shop turnings	5.50 to 6.00
Heavy axle turnings	7.50 to 8.25
Clean cast borings	6.00 to 6.50
Old iron rails	15.00 to 15.50
Locomotive grate bars	9.50 to 10.00
Stove plate (net tons)	9.75 to 10.00
Wrought pipe	7.50 to 8.00
Bundled sheet scrap	6.25 to 6.50
No. 1 busheling scrap	8.50 to 9.00
No. 2 busheling scrap	6.00 to 6.50
Bundled tin scrap	10.50

## New York

NEW YORK, April 8, 1914.

**Pig Iron.**—Somewhat more inquiry has come up, but as comparisons are with weeks of extreme stagnation, the statement need not be construed too hopefully. In Connecticut a considerable amount of malleable pig iron was sold last week, deliveries extending into the latter part of the year. The tonnage is presumed to have been about 4000 and shipments from a New York State furnace will involve a short rail haul to Albany, from which the remainder of the route will be by water. Another Connecticut malleable company is inquiring for 2100 tons of foundry grades. In New Jersey two inquiries of 1000 tons each have come up and one of 500 tons. A considerable part of the total in these cases will probably go to eastern Pennsylvania furnaces. The Lackawanna Railroad has inquired for 350 tons and there are several inquiries for 200 and 300 tons from New England and New Jersey territory. Little if any change has been made in prices, but the market has not strengthened while the furnaces have been waiting for business. Several producers have passed recent inquiries, in view of the low prices buyers have named as representing their expectations. The rate of production in Eastern districts is practically unchanged, one New York furnace, Standish, blowing in after relining, while Port Henry furnace will be out for about four weeks. One Swede furnace in the Schuylkill Valley has been blown in, but its product does not go upon the market. Virginia iron has figured but little in recent Eastern business, present quotations being out of line with prices made in other districts. We quote Northern iron for tidewater delivery as follows: No. 1 foundry, \$15.25 to \$15.50; No. 2 X, \$14.75 to \$15; No. 2 plain, \$14.50 to \$14.75. Southern iron is on the basis of \$15.25 to \$15.50 for No. 1 and \$14.75 to \$15 for No. 2.

**Cast-Iron Pipe.**—The contractors for the extension of the New York City water supply from Brooklyn under the Narrows to Staten Island have purchased the 36-in. flexible joint pipe required for this work from the Westinghouse Machine Company. The total quantity is 4100 tons, of which 300 tons will be plain bell and spigot pipe. The entrance of this company into the pipe market is a surprise to the trade. The Board of Water Supply of New York City, controlling the Catskill aqueduct, will open bids April 14 on a contractor's job involving 175 tons of 48-in. and specials. The Department of Water Supply, Gas and Electricity of the city opens bids today on a contractor's job requiring 1500 tons of 6 to 12 in. Salem, Mass., also opens bids today on 260 tons of small sizes. New Brunswick, N. J., will open bids April 14 on about 500 tons, mainly small sizes. Considerable business is

being done with private buyers, but sharp competition exists among makers for such business. Carload lots of 6-in. are regularly quoted at \$22 to \$23 per net ton, tidewater.

**Old Material.**—Dealers having contracts for delivery of old material to consumers are having quite frequent requests to defer shipments, thus indicating that consumption is not up to the expectation of the buyers. The scrap market has been exceedingly dull, transactions being few and inquiries almost entirely lacking. Dealers' quotations are continued as follows, per gross ton, New York:

Old girder and T rails for melting	\$8.25 to \$8.75
Heavy melting steel scrap	8.25 to 8.75
Relaying rails	21.50 to 22.00
Rolling rails	10.50 to 11.00
Iron car axles	18.50 to 19.00
Steel car axles	12.50 to 13.00
No. 1 railroad wrought	10.50 to 11.00
Wrought-iron track scrap	9.50 to 10.00
No. 1, yard wrought, long	8.75 to 9.25
No. 1, yard wrought, short	8.25 to 8.75
Light iron	3.25 to 3.50
Cast borings	5.75 to 6.25
Wrought turnings	5.75 to 6.25
Wrought pipe	8.25 to 8.75
Carwheels	10.50 to 11.00
No. 1 heavy cast, broken up	11.00 to 11.50
Stove plate	8.00 to 8.50
Locomotive grate bars	6.50 to 7.00
Malleable cast	7.75 to 8.25

**Ferroalloys.**—Quotations for 80 per cent. ferro-manganese still remain at \$39, seaboard, but actual sales effected are scarce. An inquiry for 1200 tons is the only interesting item in a very dull situation. In 50 per cent. ferrosilicon, sales of small lots are noticed, but large propositions are absent. Quotations are still reported to be \$73, Pittsburgh, for carloads; \$72 for 100 tons and \$71 for 600 tons and over.

**Finished Iron and Steel.**—In spite of the dullness, quite a little strength is shown in general quotations. These lie with the larger companies who are closing for contracts for the present quarter at 1.20c., Pittsburgh, for bars, plates and shapes, with at least one company, indeed, refusing to quote this figure beyond a month or six weeks. The prices appear to be obtainable in part because of the range and scope of products rolled and because of the capacity of the mills to take care of the demands of busy times. Not much new in the structural field has come into the market, but mention may be made of 3000 tons for the Taylor-Wharton Iron & Steel Company at Easton, Pa., 300 tons for viaduct repairs, Park avenue, New York, for the New York Central, and 2500 tons for the Washington Southern and the Richmond, Fredericksburg & Potomac. The New York Central is now inquiring for 500 all-steel automobile cars for the Michigan Central and the Southern Pacific is inquiring for 1300 cars, mostly hopper cars, which it is thought may develop into several thousand cars. The awards of the week include 300 tons for the Virginian, to the Roanoke Bridge Company; 400 tons for the James' residence, New York, to the American Bridge Company; 200 tons for apartment houses, West Philadelphia, to the Belmont Iron Company, and 200 tons for the Pennsylvania Railroad has also been closed. In railroad cars the Chicago & Northwestern has placed 2000 steel under and upper frame box cars with the Pullman Company, and the Great Northern has bought 2000 refrigerator cars of the Haskell & Barker Car Company. The Pressed Steel Car Company has 25 ore cars for Phelps, Dodge & Co. We quote mill shipments of steel bars, plates and structural material at 1.15c. to 1.20c., Pittsburgh, or 1.31c. to 1.36c., New York, and iron bars, 1.25c. to 1.35c., New York. We quote iron and steel bars from store at 1.90c. to 1.95c. and shapes and plates, 1.95c. to 2c.

A semi-portable hoist weighing 700 lb. and having a capacity of 2000 lb. and built for driving by means of a chain from any source of power, has been brought out by the O. K. Clutch & Machinery Company, Columbia, Pa. It takes a floor space 31 x 34 in. and is 36 in. high and has a drum 5 in. in diameter and 11 in. between the flanges taking 650 ft. of ½-in. cable or 325 ft. of 1-in. Manila rope. It has a quick spring release for the drum, an end thrust ball bearing and a brake band lined with asbestos.

## British Pig Iron Higher

### Yorkshire Colliers' Strike Imparting Strength to Pig Iron—American Inquiries for Steel

(By Cable)

LONDON, ENGLAND, April 8, 1914.

Pig iron is firm as a result of the Yorkshire colliers' strike, but a national stoppage of coal mines is regarded as improbable. Good clearances of pig iron are being made from public stores. A considerable concentrated bull account in pig-iron warrants falls due in May. The number of furnaces blowing is now 171. Fuel is the determining factor. The steel trade is dull. Semi-finished steel is easier. The tin-plate and galvanized sheet trades are very poor. America is inquiring for semi-finished steel. Stocks of pig iron in Connal's stores are 115,543 gross tons, against 121,998 tons one week ago. We quote as follows:

Tin plates, coke, 14 x 20, 112 sheets, 108 lb., f.o.b. Wales, 13s. (\$3.16).

The following prices are per ton of 2240 lb.:

Cleveland pig-iron warrants (Tuesday), 51s. 4½d. (\$12.50), against 50s. 8½d. (\$12.33) one week ago.

No. 3 Cleveland pig iron, makers' price, f.o.b. Middlesbrough, 51s. 9d. (\$12.59), against 51s. (\$12.41) one week ago.

Hematite pig iron, f.o.b. Tees, 62s. (\$15.09).

Steel sheet bars (Welsh), delivered at works in Swansea Valley, £4 10s. (\$21.89).

Steel bars, export, f.o.b. Clyde, £6 (\$29.20).

Steel joists, 15-in., export, f.o.b. Hull or Grimsby, £5 12s. 6d. (\$27.37), against £5 15s. (\$27.98) one week ago.

Steel ship plates, Scotch, delivered local yards, £5 17s. 6d. (\$28.59).

Steel black sheets, No. 28, export, f.o.b. Liverpool, £8 15s. (\$42.58).

Steel rails, export, f.o.b. works port, £5 15s. (\$27.98).

The following prices are per export ton of 1015 kilos, equivalent to 2237.669 lb.:

German sheet bars, f.o.b. Antwerp, 79s. (\$19.22), against 81s. (\$19.70) one week ago.

German 2-in. billets, f.o.b. Antwerp, 75s. (\$18.25), against 76s. (\$18.48) one week ago.

German basic steel bars, f.o.b. Antwerp, £4 8s. (\$21.41).

German joists, f.o.b. Antwerp, £5 2s. to £5 5s. (\$24.82 to \$25.55).

The freight rate from Atwerp to New York is about 8s. (\$1.95) per ton on semi-finished steel. Rates from Liverpool to Boston are 10s. (\$2.43) on semi-finished steel and 12s. 6d. to 15s. (\$3.04 to \$3.65) on finished steel.

(By Mail)

### Sheet Bars Below \$19 and Plates Around 1.25c—Hungry Continental Mills

LONDON, March 27, 1914

The really remarkable thing about the British iron trade is the way in which prices of pig iron are maintained in the face of the excessive political and financial gloom in which the commercial world has been plunged. It is a tribute to the inherent soundness of the position that under the most disconcerting circumstances the market has not only held its own but has actually improved fractionally. Of course, the basis for the stiffness is the smallness of the stocks which are held. It is reported on credible authority that the stocks in makers' yards have actually decreased since the year opened. Buying is looked for now that Northern ports have opened up.

The coke position is stiffer again, there being apparently some sort of arrangement to put out ovens notwithstanding that coal has eased considerably from the top prices. Hence it is that furnace owners who do not produce their own coke find themselves held up on prices, for output by the coke makers is being reg-

ulated pretty closely. The reserve capacity of the blast furnaces and the coke ovens is very considerable, however, and prices can hardly be boosted much without tempting some one or other to reap the harvest.

Semi-finished steel is dull. The Germans have just managed to sell a good line of sheet bars over the rest of the year, but probably had to accept 78s. (\$18.98) f.o.b. or possibly less and this is not a very fat figure. The Belgians and French are less anxious to push material on the market, and temporarily, at all events, the tone is a bit harder.

Finished steel is poor. There is very little demand, and the folly of the Scotch Steel Masters' Association in trying to tie up the consumers in such a way that they could not buy foreign material has had the effect which every one outside the trade with half an eye could see would follow, as soon as people began to want orders. As soon as the Germans started to offer steel ship plates to the Clyde far below the prices demanded by the local steel makers, lines were snapped up, and with the usual quarrels developing in the ranks of the association, dissolution followed so far as prices in Scotland were concerned. It is a little difficult to fix a price for ship plates on the Clyde, but £5 17s. 8d. (\$28.61) has been done, and probably a lower figure would be accepted now. The merchants are quite ready to take less. General trade in merchants' lines is dull, and a lot of foreign stuff such as bars and rods is being sold into the country at excessively low prices. Works on the Continent are cruelly hard up for orders.

## German Trade Conditions Worse

### Prices Decline Further—Works Closing for Lack of Orders—Syndicate Troubles

BERLIN, March 27, 1914.

The general situation appears to have grown worse. Prices are still giving way. On the Düsseldorf Exchange a week ago the price fixed for soft steel bars was 96 to 98 marks (\$22.85 to \$23.32), against 97 to 99 marks (\$23.09 to \$23.56), and for boiler plates 110 to 113 marks (\$26.18 to \$26.89), against 111 to 113 marks (\$26.42 to \$26.89). Yesterday's Cologne Gazette quoted the following export price changes as compared with last week: Heavy plates, 98s. (\$23.85), against 99s. (\$24.09); Nos. 12 to 14, 104s. (\$25.30), against 105s. (\$25.54); No. 20, 124s. (\$30.17), against 124 to 125s. (\$30.17 to \$30.42), all f.o.b. Antwerp.

The trade is still disturbed over the internal troubles of a number of trade combinations, like those in wire rods, tubing, railroad supplies, and, to a great degree also the Coal Syndicate, owing to its close relations with the iron trade. All the uncertainties about these organizations tend to cripple business. The relaxation of activity is manifestly becoming more marked. The shutting down of open-hearth furnaces is now more frequently reported, and production in general is slowly declining.

Foreign ores are still weakening. Santander (Spanish) ores are now quoted at 15.25 marks (\$3.63), and some reports say 15 marks (\$3.57), laid down on the Ruhr.

The requirements of pig-iron consumers for the rest of the half-year having been provided for some time ago, there is now little buying. In the Siegerland region the situation is reported as growing worse, and stocks of iron are accumulating at the furnaces. The demand for scrap is shrinking, and prices have fallen 2 or 3 marks (48c. to 71c.) this month.

In semi-finished steel the home trade remains quiet, with shipments at about the previous rate, but foreign buyers, it is reported, are disposed to place contracts for longer periods than hitherto.

A slightly better tone in structural steel is reported from southern Germany. In the western district shipments are heavier; it is even asserted that the March movement will exceed that of 1913. Other reports, however, are far less cheerful. The leading newspaper of Essen says that the improvement in that region has not been especially marked.

The rail trade is doing quite well. The Union is still negotiating with the Prussian Railway Minister about the new rail contract, but as he is trying to force down prices it has not yet been signed. There will be considerable new work for the Prussian roads coming out later on, as the railroad bill just laid before the Reichstag calls for appropriations of above \$120,000,000 for building new roads, laying second tracks, and buying rolling stock. Some good foreign orders have recently been taken at prices ranging between 112 and 120 marks (\$26.66 to \$28.56). Calls for shipment of light rails for mines and for construction work have latterly grown brisker.

The bar trade remains in a most unsatisfactory position. The makers are trying to keep their mills running and are therefore taking orders at low prices. A few are adhering to 97 to 98 marks (\$23.09 to \$23.32) for ordinary soft steel bars, but most of the trading is done at about 94 to 96 marks (\$22.37 to \$22.85), while some are reported as selling as low as 93 marks (\$22.13). These prices are all for the home trade. For export the prices are 87 to 88 marks (\$20.71 to \$20.94), on board ship. The market for bands, both hot and cold-rolled, has further weakened. The plate trade is suffering from overproduction; hence competition is sharp for what business is coming out.

The tube trade has further depreciated. Competition among producers has grown still keener, and prices have been forced down to such a low point that it is difficult if not impossible for the mills to earn profits, yet buying is slow, which shows that consumers and dealers are by no means fearing an advance.

A meeting is to be held at Cologne today to make a further effort to prolong the wire-rod association, with the inclusion of the wire and wire-nail mills. The prospects for an agreement, however, are not regarded as bright. The agreement for a community of interest arrangement between six rod mills and some 30 wire-drawing concerns has not yet been sanctioned by the association, and it is doubtful whether the arrangement will be approved at today's meeting. If it is not, then the six works, it is expected, will proceed to put into effect their arrangement, with headquarters at Düsseldorf.

The German tin-plate trade is in a bad way, the market being flooded with cheap English products. Stocks are accumulating at the German mills, and prices have sunk to an unusually low point.

## Metal Market

NEW YORK, April 8, 1914.

### The Week's Prices

Cents Per Pound for Early Delivery							
Copper, New York		Lead		Spelter			
April	Lake	Electro-lytic	Tin, New York	New York	St. Louis	New York	St. Louis
1	14.87½	14.50	37.75	3.80	3.70	5.27½	5.12½
2	14.87½	14.50	37.50	3.80	3.70	5.27½	5.12½
3	14.87½	14.55	37.20	3.80	3.70	5.27½	5.12½
4	14.87½	14.55	37.30	3.80	3.70	5.27½	5.12½
5	14.87½	14.55	37.15	3.80	3.67½	5.27½	5.12½
6	14.87½	14.55	36.70	3.80	3.67½	5.27½	5.12½

Copper is dull but quotations are higher. Tin has declined steadily though but little has been sold. Lead quotations are on about the same level and big sales have been made. Spelter is quiet and weaker. In antimony there has been no change.

### New York

Copper.—The leading sellers on April 3 advanced the price of electrolytic to 14.75c., delivered, 30 days, or 14.62½c., cash, New York, and since that day there has been very little business either on foreign or domestic account. They had previously advanced their price from 14.37½c., cash, to 14.50c., cash, and up to the announcement of the last figure named a moderate business was done. The market to-day is very dull, with electrolytic at about 14.55c., cash, for the few resale lots to be had. The Copper Producers' statement for March appears today and waiting for this has held business in check. The advances referred to were not based on domestic buying nearly so much as on the extremely large showing made by exports in March. Sales of prime Lake have

been made at 14.87½c., cash, though choice brands continue nominal at 15.12½c. The London quotations to-day are £65 15s. for spot and £66 1s. 3d. for futures. Exports this month total 6119 tons. Manufacturers of copper and brass products are feeling a slightly better demand.

**Copper Averages.**—The Waterbury average for the month of March was 15c. The average New York price for Lake copper, based on daily quotations in *The Iron Age*, was 14.79c. and electrolytic, 14.33c.

**Tin.**—The market has been dull with scarcely a break except on Friday and Saturday when some activity resulted from an effort to get what little business there was stirring. Rumor had it that a heavy business was done, but it simmered down to the fact that only between 200 and 250 tons was taken on the two days. Quotations have declined almost steadily in New York and London. There has been considerable price cutting here despite the fact that spot supplies are well concentrated. The New York price yesterday was 36.70c. The London quotations to-day were £167 for spot and £169 for futures against £173 5s. for spot and £174 15s. for futures a week ago. The London market is a drifting one and gaining no support from any direction. Arrivals this month total 1853 tons and there is afloat 2187 tons.

**Lead.**—At the low prices which have prevailed in the last 10 days large quantities have been taken for April and May delivery, but buying has now eased off. Independent producers are comfortably filled up with orders and are not inclined to take new business unless they can realize more than the large interest is asking. A feature which has developed with the low quotations has been the tendency on the part of interests not in any way associated with the lead business to buy for speculation. The New York price is unchanged at 3.80c., but St. Louis is 2½ points lower at 3.67½c. An effort to boost prices in London did not last long and the market abroad resumed its course of weakness.

**Spelter.**—There has been a continuation of the dull demand and some little weakness has developed. Quotations are 5.27½c., New York, and 5.12½c., St. Louis.

**Antimony.**—There is no movement worthy of note and prices continue unchanged at 6.75c. to 7c. for Hall's, 7.20c. to 7.25c. for Cookson's and 5.75c. to 6.25c. for Chinese and Hungarian brands.

**Old Metals.**—Business continues dull. Dealers' selling prices remain unchanged as follows:

	Cents per lb.
Copper, heavy and crucible	13.75 to 14.00
Copper, heavy and wire	13.25 to 13.50
Copper, light and bottoms	12.75 to 13.00
Brass, heavy	9.00 to 9.25
Brass, light	7.75 to 8.00
Heavy machine composition	12.25 to 12.50
Clean brass turnings	8.75 to 9.00
Composition turnings	11.25 to 11.50
Lead, heavy	3.75
Lead, tea	3.50
Zinc scrap	4.25

### Chicago

APRIL 6.—The week has been one of fair activity in the copper market, with prices firmly held. Tin prices, while down to the low average of the past three years, continue to yield in the face of increasing stocks. Lead prices have also been subject to further reductions. We quote as follows: Casting copper, 14.50c. to 14.75c.; Lake copper, 15c., for prompt shipment; small lots, ¼c. to ½c. higher; pig tin, carloads, 38.50c.; small lots, 40.50c.; lead, desilverized, 3.75c., and corroding, 4c., for 50-ton lots; in carloads, 2½c. per 100 lb. higher; spelter, 5.20c.; Cookson's antimony, 9.50c. for cask lots; other grades, 8c.; sheet zinc, \$7, f.o.b. La Salle or Peru, Ill., less 8 per cent. discount in carloads of 600-lb. casks. On old metals we quote buying prices for less than carload lots as follows: Copper wire, crucible shapes, 12c.; copper bottoms, 11c.; copper clips, 11.25c.; red brass, 11.25c.; yellow brass, 8c.; lead pipe, 3.50c.; zinc, 3.50c.; pewter, No. 1, 23c.; tin foil, 27c.; block tin pipe, 31c.

### St. Louis

APRIL 6.—The lead market was weak the early part of last week, but firmed up somewhat toward the close, with 3.70c. bid and refused for 100 tons of Missouri. Spelter closed dull but rather firm at 5.15c. asked and no demand of moment. Tin is quoted at 37.55c. to

37.85c.; Lake copper, 15.35c.; electrolytic copper, 15.10c.; Cookson's antimony, 7.60c. In the Joplin ore market the basis range on zinc blende was \$36 to \$40 per ton for 60 per cent., with the choicest lots as high as \$43. On calamine the basis range for 40 per cent. was from \$19 to \$21, with the choicest lots \$23. The best price obtainable on lead ore was \$45 for 80 per cent. Miscellaneous scrap metals are quoted as follows: Light brass, 6.50c.; heavy yellow brass, 8c.; heavy red brass and light copper, 10c.; heavy copper and copper wire, 11c.; zinc, 3.50c.; lead, 3.50c.; tea lead, 3c.; pewter, 26c.; tinfoil, 31c.

## Iron and Industrial Stocks

NEW YORK, April 8, 1914.

The stock market has been extremely quiet, the volume of business on some days having been almost as small as in midsummer. The range of prices on active iron and industrial stocks from Wednesday of last week to Tuesday of this week has been as follows:

Allis-Chal., pref.. 45½-45½	Pressed Stl., com. 43-44
Am. Can, com... 29½-30½	Pressed Stl., pref. 103½-104
Am. Can, pref... 91½-92½	Ry. Spring, com. 28½-29½
Am. Car & Fdy., com. .... 50½-51½	Republic, com... 23½-24½
Am. Car & Fdy., pref. .... 114½-116	Republic, pref... 86½-87½
Am. Loco., com. 34-34½	Rumely Co., com. 9½-10½
Am. Loco., pref. .... 102	Rumely Co., pref. 27-29
Bald. Loco., com. 48½-49½	Pipe, pref. .... 42
Bald. Loco., pref. .... 108	U. S. Steel, com. 62½-64
Beth. Steel, com. 41-42	U. S. Steel, pref. 110-110½
Beth. Steel, pref. 84-85	West'gh's Elec. 74-75½
Case (J. I.), pref. 87-88	Chic. Pneu. Tool. 57-57½
Colorado Fuel... 31½-32½	Cambria Steel... 49½-49½
Deere & Co., pref. 94-95½	Pa. Steel, pref... 66-66½
General Electric. 146½-147	Cruc. Steel, com. 15½-15½
Gt. N. Ore Cert. 34-36	Cruc. Steel, pref. 90½-92
Int. Harv., com. 104-105½	Harb. Wk. Ref., com. 51½
Int. Harv., Corp. 104-104½	Harb. Wk. Ref., pref. 99
Lack. Steel... 34½-34½	La Belle Iron, com. .... 39½-40½
Nat. En. & St., com. .... 11½	

## Dividends Declared

The Harbison-Walker Refractories Company, regular quarterly, 1½ per cent. on the preferred stock, payable April 10.

The Rhode Island Perkins Horseshoe Company has passed the regular April quarterly dividend of 1½ per cent. on its preferred stock.

## Automatic Locomotive Fuel Sprinkling Device

A coal sprinkling device for use on locomotives, which acts on the principle of an injector, is being made by the Hancock Inspirator Company, 119 West Fortieth street, New York City. The principal feature of the mechanism is a valve which automatically discriminates between steam and water. In operating the coal sprinkler, the steam valve is opened wide and steam flows forming a jet and combining with water, to force the latter through the delivery pipe and into the delivery hose. If the flow of water should be interrupted or the injector refuse to work, the steam is blown back toward the suction pipe, and by forcing this valve upward, the opening to the delivery tube is cut off. It is emphasized that when the sprinkler is not in operation water will not flow up the delivery pipe or the steam pipe, and both will be kept clear. Comparatively cold water is used by the sprinkler which is self-draining so that it cannot freeze.

## February Iron and Steel Exports and Imports

The February report of the Bureau of Foreign and Domestic Commerce shows a slight decrease in the total value of iron and steel exports and a small decline in the imports, as compared with January. The total value of the exports of iron and steel and manufactures thereof, not including iron ore, in February was \$16,520,260, against \$16,706,836 in January and \$24,089,871 in February, 1913. Import values for February were \$2,175,746, as compared with \$2,334,895 in January and \$2,587,158 in February, 1913.

The exports of commodities for which quantities are given totaled 121,198 gross tons in February, as compared with 118,768 tons in January and 241,843 tons in

February, 1913. The most noteworthy decline was in steel rails, which in February, 1913, were exported to the amount of 53,376 tons and fell off to 10,932 tons in the present year. Wire rods, after declining from 3497 tons a year ago to 869 tons in January of the present year, increased to 3134 tons.

Details of the exports of tonnage commodities in February and the eight months ended with February, compared with the corresponding periods of the previous fiscal year, are as follows:

Exports of Iron and Steel

	February		Eight months	
	1914	1913	1914	1913
	Gr. tons	Gr. tons	Gr. tons	Gr. tons
Pig iron .....	9,456	27,822	153,293	194,309
Scrap .....	5,221	9,721	56,812	71,132
Bar iron .....	183	1,126	8,205	17,572
Wire rods .....	3,134	3,497	22,015	43,827
Steel bars .....	8,776	19,264	107,819	159,295
Billets, ingots and blooms .....	2,850	13,035	25,696	189,954
Bolts and nuts .....	1,113	1,569	13,834	13,329
Hoops and bands .....	462	1,192	8,056	11,281
Horseshoes .....	114	121	820	740
Cut nails .....	371	222	2,604	3,641
Railroad spikes .....	396	885	5,420	8,748
Wire nails .....	2,531	3,816	25,432	58,825
All other nails, including tacks .....	171	334	2,167	4,729
Pipes and pipe fittings .....	17,259	19,980	170,191	161,101
Radiators and cast-iron house heating boilers .....	152	1,019	4,337	5,940
Steel rails .....	10,932	53,376	257,485	309,991
Galvanized iron sheets and plates .....	2,596	9,074	37,111	88,289
All other iron sheets and plates .....	1,143	1,603	8,472	22,101
Steel plates .....	12,738	18,114	116,407	173,355
Steel sheets .....	10,080	9,374	90,835	85,138
Structural iron and steel .....	17,299	27,692	225,263	214,090
Tin and terne plates .....	3,395	4,284	45,351	26,474
Barbed wire .....	4,790	5,643	54,637	60,530
All other wire .....	6,036	9,080	54,410	94,375
Totals .....	121,198	241,843	1,496,672	1,996,577

In February the imports of commodities for which quantities are given totaled 14,308 gross tons, against 17,837 tons in January and 25,504 tons in February, 1913. The principal changes were an increase in steel rails from 199 tons a year ago to 1088 tons and in tin and terne plates from 275 tons to 3274 tons. Details of the imports of these commodities in February and the eight months ended with February, as compared with the corresponding periods of the previous fiscal year, are as follows:

Imports of Iron and Steel

	February		Eight months	
	1914	1913	1914	1913
	Gross tons	Gross tons	Gross tons	Gross tons
Pig iron (including ferro-silicon) .....	12,816	38,892	97,586	113,445
Ferrosilicon .....	46	1,345	1,345	1,345
All other pig iron .....	3,380	41,905	41,905	41,905
Scrap .....	1,342	6,604	21,110	26,481
Bar iron .....	2,010	2,569	17,269	19,070
Structural iron and steel .....	198	667	6,415	9,851
Ingots, blooms and steel billets .....	1,244	6,317	12,548	12,548
Steel billets without alloys .....	15	12,189	12,189	12,189
All other steel billets .....	2,352	12,398	12,398	12,398
Steel rails .....	1,088	199	9,785	2,101
Sheets and plates .....	189	298	1,501	2,510
Tin and terne plates .....	3,274	275	16,055	1,389
Wire rods .....	414	832	8,338	9,882
Totals .....	14,308	25,504	183,519	175,894

\*Figures cover period from January 1 to October 3, inclusive.

†Figures cover period since October 3, 1913.

The imports of iron ore in February were 112,574 gross tons, against 101,804 tons in January, 223,933 tons in December, 1913, and 188,734 tons in February.

The total value of the exports of iron and steel and manufactures thereof, not including iron ore, for the eight months ended with February was \$171,627,968, against \$198,314,227 for the corresponding period of the previous fiscal year. The value of the imports of iron and steel and the manufactures thereof, excluding iron ore, for the same period was \$20,320,422, as compared with \$21,292,585 for the same part of the previous fiscal year.

A decline is shown in the shipments of the Austrian Iron and Steel Syndicate last year, the total for 1913 being about 600,000 tons, as compared with 837,100 tons in 1912. Rails is the only item showing an increase.

### Charles M. Schwab's Views

After the annual meeting of the Bethlehem Steel Corporation, held on Tuesday, April 7, President Schwab, in reply to questions as to the condition of the steel industry, said that business is very bad but that he did not believe the present depression would last as long as others. His chief reason for so believing was that business is now managed by conservative and capable corporation heads. Referring to extensions of the Bethlehem Steel Company, Mr. Schwab said that for a number of years the company has spent about \$6,000,000 a year in new work and expected to spend a large amount of money this year. Of the company's iron ore properties in Chile, he said that shipments of material and equipment had been made to the mines and operations are under way. The contract for the construction of vessels to carry the ore has been let to three companies in Norway and Sweden, each of which is to build two boats, to be ready for service in the spring of 1917.

The Buffalo Terminal Commission has accepted the plans submitted by the New York Central Railroad Company for the building of a passenger station and terminal on the west side of the Terrace between Erie and Church streets, west of Main street, and having an approach from Delaware avenue. The new station will have a façade of 600 ft. on the Terrace, with a depth of 200 ft. to the trainshed, which will provide for 20 tracks. Train platforms to be reached by overhead bridges from the station building. The approximate cost of the station and terminal will be \$9,000,000. It will be reached from the east by a four-track tunnel under Main street. On completion of the new terminal the site of the old passenger station, which is east of Main street, will be taken for the erection of a series of freight warehouses and freight terminals with team track facilities.

The Link-Belt Company has moved its Boston office from 131 State street to 49 Federal street. It is in excellent position in the new quarters to give prompt and efficient service. The company's products are elevators and conveyors for handling materials, coal and ash handling machinery, power plant equipment, locomotive cranes, portable wagon loaders, belt conveyors, screw conveyors, package and freight handling machinery, malleable link belt and finished steel roller chains, link belt silent chain drives and elevator buckets. The company also announces the opening of an office in Detroit, Mich., in room 911, Dime Bank Building, which will be in charge of L. W. Longan, formerly connected with its Chicago and Indianapolis plants.

Announcement was made at Duluth this week of the organization of the American Manganese Manufacturing Company, with capital of \$12,000,000, into which will be merged the Cuyuna-Mille Lacs Iron Company and the Cuyuna-Duluth Iron Company. It was stated that the consolidation would finally include an Eastern company having blast furnaces and that this company would convert the manganiferous ores on the Cuyuna range into ferromanganese, the plan being to import some high manganese ores also.

An industrial hygiene committee has been established by the National Council for Industrial Safety, Continental and Commercial National Bank Building, Chicago. The personnel of the committee has been selected, it is understood, to include representatives of the different professions involved in the conduct of industrial establishments. The committee is making investigations and collecting data looking toward the establishment of standard rules and the like.

The New York Public Service Commission has decided that the South Buffalo Railroad, which affords facilities for several large independent industries, should be classed as a common carrier and not as a plant facility of the Lackawanna Steel Company, and has made corresponding representations to the Interstate Commerce Commission.

### Papers on Electric Furnace Problems

The twenty-fifth general meeting of the American Electrochemical Society will be held in New York, Thursday, Friday and Saturday, April 16 to 18. The technical sessions will be held Thursday morning and afternoon in Rumford Hall in the Chemists' Building, 50 East Forty-first street, and on Saturday morning and afternoon in Earl Hall, Columbia University. Visits will be made Friday in connection with an all-day excursion by steamboat around New York harbor and Staten Island to the plants of the American Smelting & Refining Company, United Lead Company and Waelark Wire Company. Among the papers to be read are the following which are of particular interest to readers of *The Iron Age*:

F. A. J. FitzGerald, "Some Economies in the Use of Energy in Electric Furnaces."

W. S. Horry, "Power for Electric Furnace Work."

Lawrence Addicks, "The Power Problem in the Electrolytic Deposition of Metals." Also a paper on the same subject by H. E. Longwell.

C. A. Hansen, "Electric Steel Castings."

Eugene B. Clark, "Electric Furnaces for Steel Making."

Oliver W. Storey, "A Microscopic Study of Electrolytic Iron."

O. P. Watts and H. M. Li, "The Effect of Addition Agents in the Electrodeposition of Iron."

The Joseph F. Wangler Boiler & Sheet Iron Works Company, St. Louis, celebrated its semi-centennial anniversary March 28, having been established in 1864. The company is perhaps best known by the milling trade through the Wangler type of steel grain elevators. The founder of the business, Joseph F. Wangler, recently celebrated his seventy-seventh birthday. He is a practical mechanic, having worked at his trade for a number of years before establishing the business which bears his name and which is looked after now chiefly by his sons. In 1863 Mr. Wangler was employed by the United States in the construction of gunboats for river use. When the Eads Bridge was built across the Mississippi at St. Louis he had the contract for the iron and steel work in his line.

The Ashland Steel Company, Ashland, Ky., has recently added new equipment and is now a producer of sheet bars to the extent of about 400 tons per day, in addition to Bessemer steel billets, slabs and wire rods. It also made some changes in its continuous rod-mill train and added cooling beds, crane equipment, etc. It expects to market practically all of its output of sheet bars to sheet manufacturers in the vicinity.

That graduates of engineering schools do not follow the engineering profession is shown to be erroneous in the case at least of the College of Engineering of the University of Illinois. Of the 2165 graduates, 89 per cent. are engaged in one way or another in engineering work, and only about 8 per cent. have gone into other fields and about 2½ per cent. of these in farming.

The United States District Court, Buffalo, on March 31 granted an order, on the request of the creditors, permitting the receivers of the Buffalo Pitts Company to raise \$500,000 on receivers' certificates for the purpose of completing the manufacture of machines under contract. It is estimated that this action will mean a clearing of fully \$300,000 for distribution among the creditors.

The steamer W. Grant Morden, the longest vessel on the Great Lakes, was launched April 4 at the Port Arthur yards of the American Shipbuilding Company. The Morden is 625 ft. in length over all, being 8 ft. longer than the longest Lake boat operated at present. It is being built for the Canada Steamship Lines and will be used principally in the grain trade.

Ambrose Beard & Son, dealers in black and galvanized steel sheets and roofing tin, will carry a stock in Detroit, Mich., commencing about May 1, and will open an office April 15 in room 1632 Dime Bank Building, in that city.

## PERSONAL

A. W. Tait of London, England, has been elected to the vacancy in the directorate of the Otis Steel Company, Cleveland, Ohio, caused by the death last September of Chairman T. Frame Thompson. Mr. Tait is prominent financially in England and is connected with a number of important industries. He will probably be named as chairman of the directorate of the company.

Francis Hodgkinson, chief engineer of the Westinghouse Machine Company, gave an address before the Pittsburgh Section of the Association of Iron and Steel Electrical Engineers, at the Seventh Avenue Hotel, Pittsburgh, April 4, on high, low and mixed pressure steam turbines.

W. P. Thornton, who has been with the Riter-Conley Mfg. Company for many years in various capacities, has resigned to accept a position with the Treadwell Construction Company. During the erection of the Gary blast furnaces of the Indiana Steel Company he was engineer in charge for the Riter-Conley Company.

James C. H. Ferguson, for the past 13 years Pacific coast sales agent of the Midvale Steel Company, Philadelphia, has severed his connection with that company and is now the Pacific coast representative of the William Cramp & Sons Ship & Engine Building Company, Philadelphia, having his office in the Monadnock Building, San Francisco.

H. M. Ramp, formerly general superintendent of the Modern Foundry Company, Oakley, Ohio, who resigned several months ago on account of ill health, has been appointed manager of the Elmwood Castings Company, Elmwood place, Cincinnati, Ohio.

J. M. Searle, formerly chief smoke inspector of Pittsburgh, has opened offices as mechanical engineer in rooms 204 and 205 Germania Bank Building, 421 Wood street, in that city.

Jonathan R. Jones, secretary and treasurer of the Alan Wood Iron & Steel Company, Philadelphia, has gone to the Pacific coast, where he will visit San Francisco, Seattle and other points, expecting to be absent about two months.

Boyd Fisher has resigned as secretary of the Efficiency Society, 41 Park Row, New York City.

H. R. Linton, formerly of the Aetna Foundry & Machine Company, Warren, Ohio, has resigned to become works manager of the Valley Star Stove Company, Wheeling, W. Va.

Henry C. Frick has subscribed \$50,000 to the National McKinley Birthplace Memorial Association, J. G. Butler, president, Youngstown, Ohio, having been so notified by Mr. Frick. The memorial is to be built at Niles, Ohio, where Mr. McKinley was born. The original project of raising \$100,000 for a suitable memorial was expanded to \$250,000. The donation of Mr. Frick makes it certain that a free library will be a feature of the memorial.

David Tod, president William Tod Company, and largely interested in other manufacturing concerns at Youngstown, Ohio, has announced himself as a candidate for Governor of the State.

Hugh F. McKnight, who has been connected with the Carnegie Steel Company in Pittsburgh and Cincinnati for seven years, resigned April 1, and has assumed the management of the Samuel F. McKnight Hardware Company, Pittsburgh.

Effective April 1, Henry L. Austin, for some years auditor of the American Sheet & Tin Plate Company, Pittsburgh, resigned to become assistant comptroller of the United States Steel Corporation. He will maintain an office in the Frick Building, Pittsburgh, for a few months, but eventually will be located at 71 Broadway, New York. G. M. McGinnis, formerly assistant auditor, succeeds Mr. Austin as auditor, and Roland J. Hadley has been appointed assistant auditor.

S. W. Nicholson has resigned as superintendent of the Gurnsey works of the American Sheet & Tin Plate

Company, Cambridge, Ohio, and will engage in business with his son.

Edward S. Dean, superintendent of the Eastwood works of the Pierce, Butler & Pierce Mfg. Company, at Syracuse, N. Y., has been presented with a gold watch by the 475 employees to show their appreciation of what he has done in bettering working conditions in the shops. These employees have petitioned the creditors and stockholders to continue the business under the present management. Mr. Dean has had a long experience in the management of shops manufacturing steam and hot-water heating boilers.

The Merrill Iron Works, Merrill, Wis., has undergone a change in management by reason of the retirement of George Schuppert, secretary and general manager, for recuperation. Henry Patzer has been elected as his successor. H. B. Richmond continues as president and treasurer. The plant is operating at full capacity.

W. S. Heger, formerly Pacific coast representative of the Allis-Chalmers Company, has opened an office in the Rialto Building, San Francisco, as Pacific coast sales manager for the Busch-Sulzer Brothers Diesel Engine Company, St. Louis.

John Reid, Jr., has been elected secretary and general manager of the Belle City Mfg. Company, Racine, Wis.

Prof. L. P. Breckenridge, Sheffield Scientific School, Yale University, is to give an address at Buffalo, N. Y., April 10, on "Impressions of Industrial Germany."

Rodney E. Day, formerly with the Dravo-Doyle Company, Pittsburgh, has resigned to take charge of a new office which the William Tod Company, Youngstown, Ohio, has opened at Pittsburgh.

## OBITUARY

WILLIAM NICHTHAUSER died at his home in New York City, April 1, aged 47 years. He came from Germany to this country in 1884 and embarked in the manufacture of tinware. His firm is known as Nichthauser & Levy, with a factory at 252 Java street, Brooklyn, N. Y. He leaves a widow and one son.

Graphic methods for those who must frequently condense and abstract information and write reports is to be made the subject of a paper by Willard C. Brinton before a meeting of the American Society of Mechanical Engineers at 29 West Thirty-ninth street, New York City, Tuesday evening, April 14. It is understood that much of the talk will be devoted to methods for keeping corporation operating records in convenient form for instantaneous reference by executive officers.

The Cincinnati Sheet Metal Club, Cincinnati, Ohio, held its fourth meeting at the Business Men's Club on the evening of April 2. Charles Kobman, 1919 Central avenue, chairman of the Exhibit Committee, reported that, while the committee had only been at work one week, a number of spaces had been taken. The exhibits will be held in Music Hall during the convention of the National Association of Sheet Metal Contractors.

The Canton Chamber of Commerce, Canton, Ohio, has been formed as a civic and industrial organization and in it will be merged the Canton Business Men's Association, Board of Trade, Builders' Exchange and some other organizations. H. H. Timken, Timken Roller Bearing Company, has been elected president of the new organization. The directors are for the most part Canton manufacturers.

The monthly statement of the Copper Producers' Association, issued April 8, shows 64,609,319 lb. of marketable copper on hand April 1 as against 78,371,852 lb. on March 1, a decline of 13,762,533 lb.

## Pittsburgh and Nearby Districts

The Universal Rolling Mill Company, Bridgeville, Pa., maker of steel sheets and small plates, has recently added to its plant a 26 x 66 in. reversing roughing mill, which is now in operation. The company increased its capital stock from \$150,000 to \$200,000 to provide for the new mill and states that it will not be in the market for any further equipment at present.

The Cheat River Coal Company, Albright, W. Va., incorporated with \$500,000 capital stock, will build 100 beehive coke ovens and will invest about \$70,000 in machinery. A. R. Balcolm is manager and constructing engineer.

The Sanitary Glass Milk Bottle Company will erect a glass plant at Moundsville, W. Va., at a cost of \$50,000. W. G. Edmunds, Pittsburgh, and Harry Edmunds, Moundsville, are the promoters.

At a meeting of the directors of the La Belle Iron Works in Steubenville, Ohio, the following officers were elected: Chairman, George Greer, New Castle, Pa.; president, W. G. Crawford, Steubenville; vice-president, H. D. Westfall, Steubenville; secretary-treasurer, R. C. Kirk, Steubenville. President Crawford said the plant is now being operated at 85 per cent. of its capacity and predicted a prosperous future.

The Reed-Clark Company, Moundsville, W. Va., has been incorporated with \$15,000 capital stock to manufacture wooden ware. The incorporators are James B. Clark, Pittsburgh; J. R. Brown, Washington, Pa.; C. E. Brown, Moundsville, W. Va., and others.

The Alliance Structural Company, Alliance, Ohio, has filed notice of increase in its capital stock from \$100,000 to \$200,000.

The Builders Iron & Steel Company, McKeesport, Pa., has been organized for the purpose of erecting at Dravosburg Station, in that vicinity, a plant for fabricating structural steel and building steel concrete stairs. H. Sellers McKee, a former glass manufacturer, is president of the company.

A special meeting of stockholders of the New Castle Iron & Steel Company will be held at New Castle, Pa., May 27, to approve an increase in the capital stock of the company from \$400,000 to \$550,000, the new stock to be preferred and that now outstanding to be common stock. If the additional capital is authorized, the company will install considerable new machinery and will probably take up one or two new lines of manufacture.

Bollinger Brothers, contractors, engineers and manufacturers of mill supplies, Frick Building, Pittsburgh, have bought a site of five acres in the West End of that city on which a new plant will be built, the company having sold its property at Newell Station in Fayette County, Pa., to the Pittsburgh & Lake Erie Railroad. The buildings will cover about one and a quarter acres and will include a large fabricating shop. Considerable new equipment will be bought. S. W. Bollinger is president and O. J. Tope is secretary and treasurer.

The Dresser Engine & Foundry Company, Oil City, Pa., has applied for a Delaware charter with a capital of \$300,000, the incorporators being Robert O. Dresser, general manager of the Flickinger Iron Works, Bradford, Pa.; Richard P. Morgan, president Oil City Foundry Company, and Richard Lynman, secretary-treasurer of the same company. The new company has taken over the plants of the Flickinger Iron Works at Bradford, Pa., and the Oil City Foundry Company at Oil City, the Bradford plant to be removed to Oil City. It will make a specialty of building high grade steam engines and air compressors.

The Kilgore Mfg. Company, Homestead, Pa., has applied for a Delaware charter with a capital of \$10,000 to manufacture patterns, dies, castings and special tools. The incorporators are J. D. Kilgore, L. F. Hilsdor, Homestead, Pa.; M. M. Emmondson, Glassport, Pa.

The Pittsburg Model Engine Company, incorporated some months ago, will shortly begin work on its new plant at Homewood, near Pittsburgh. It has purchased the plant of the Model Gas Engine Company, Peru,

Ind., and the greater part of the equipment will be removed to the new works in Pittsburgh. The main building will be 240 x 247 ft., of steel and concrete, with a cement saw-tooth roof. An office building will also be erected. The firm will make a specialty of manufacturing piston valve engines. Temporary offices have been opened in the Farmers' Bank Building, Pittsburgh. W. J. Strassburger is president.

The Standard Steel Car Company, Pittsburgh, will make some addition to its works at New Castle, Pa. These will include a building, 80 x 500 ft., to be used for building underframes and equipped with electric cranes, and another building, 80 x 750 ft., to be used in the general extension of the plant capacity.

Soho furnace of the Jones & Laughlin Steel Company, Pittsburgh, which has been idle for some months, being entirely rebuilt, will be ready for blast in the latter part of April. No attempt was made to hurry the work on the furnace.

It is announced that the entire \$3,080,000 issue of the new common stock of the Youngstown Sheet & Tube Company, Youngstown, Ohio, has been subscribed.

In March the No. 2 open-hearth steel plant of the Duquesne steel works of the Carnegie Steel Company, Duquesne, Pa., turned out 61,146 gross tons of ingots, an increase of 2943 tons over the same month last year. This is a new high record for the No. 2 plant which has 12 60-ton furnaces. In March the No. 1 plant, having 14 50-ton and 6 60-ton furnaces, turned out 62,978 gross tons of ingots, but this is not a record, having been exceeded in March last year.

The Mesta Machine Company, Pittsburgh, has received an order from the Cambria Steel Company, Johnstown, Pa., for a 48-in. cold saw, which will weigh about 50,000 lb. and will be able to cut steel sections from the smallest size up to 24-in. I-beams. It will be driven by a 150-hp Westinghouse motor and will run at a peripheral speed of 22,600 ft. per min., with a cutting speed of 1 in. per sec.

Senator George T. Oliver, of Pennsylvania, in order to ascertain what amount is due the McClintic-Marshall Company, Pittsburgh, for materials furnished and work done at the Panama Canal, has introduced a bill in Congress authorizing Col. George W. Goethals, Military Governor of the Canal Zone, to have an investigation made of the claims made by the company for \$2,394,480 and to adjudicate them.

H. L. Heintzelman, C. E. Hutchinson, J. M. Jacobs and others of Fairmont, W. Va., have organized a foundry company to manufacture molds for use in glass manufacturing. A foundry, machine shop, etc., will be built in Fairmont.

The Griffith Coal Company, Charleston, W. Va., has been incorporated with \$1,000,000 capital stock by F. W. Ogden, C. P. W. Dickinson, A. Widdowfeld and others of Scranton, Pa.

The Rickert-Shafer Company, Erie, Pa., capitalized at \$10,000, has been incorporated by A. A. Rickert, George E. Shafer and others to manufacture machinery.

The Champion Iron Company, Kenton, Ohio, has closed contracts for structural steel for the Lehr Memorial building, Ada, Ohio; an administration building for the Ohio Northern University, also at Ada, and an ice plant at Marion, Ohio, requiring in all about 460 tons.

The Pennsylvania Public Service Commission has under consideration an application for a hearing on a proposition to allow railroads to cancel rates with short line or industrial railroads on five days' notice. The question of such agreements has been before the commission for several weeks and at its session on March 30 it was ruled that rates could not be changed except on 30 days' notice. A number of industrial railroads, which haul only freight, come within the scope of the application. The request for the hearing came from railroads operating in the Pittsburgh district.

The total deliveries of all kinds of steel and iron of the Russian Prodamet for 1913 amounted to 2,120,222 net tons, as compared with 2,034,194 in 1912.

## FOUNDERS AND THE OPEN SHOP

### O. P. Briggs Differentiates Sharply Between Good Labor Unions and Bad

WASHINGTON, D. C., April 8, 1914.—O. P. Briggs, of Minneapolis, formerly president of the National Founders' Association, was one of the chief witnesses before the United States Commission on Industrial Relations on Monday on the subject of collective bargaining, conciliation and arbitration. He was listened to with the keenest interest. Mr. Briggs was very frank and stated among other things that he believed the American Federation of Labor was a curse to its average members. His experience had led him to divide labor unions into two classes, good and bad. He designated as good labor unions the open shop labor unions, such as the locomotive engineers' organization, and those of the firemen and other employees not affiliated with the American Federation of Labor. These, he said, were always ready to reason and would arbitrate all differences, and their history was largely free from strikes. The other unions, the closed shop unions, which he designated as bad unions, would not arbitrate anything except what they pleased and always made unreasonable demands.

#### WHY FOUNDERS BROKE AWAY

Mr. Briggs outlined the unsatisfactory way the agreement between the founders and the molders worked from 1899 up to the date of its abrogation in 1904. He declared that the association he represented was not opposed to collective bargaining and even did not object to its members dealing with local unions if a strike could be avoided in that way and the member maintain his right to run his business as the law permitted him to do. Mr. Briggs said that the National Founders' Association represented about 550 founders, employing something in excess of 30,000 molders. He said there were about 150,000 molders in the United States and about 6000 foundries. The attitude of the founders had always been that they were willing to accede to almost anything to avoid a strike, but in 1904 conditions became intolerable. He traced at length the numerous conferences and meetings between representatives of the association and of the molders' union under the agreement and there were hundreds of conferences, generally without result.

"Then we decided to bring in the odd party to arbitrate. In every case without a single exception, the molders refused to arbitrate; that is, they refused to bring in the odd party." Things thus ran along until November, 1904, when the founders abrogated the agreement. Mr. Briggs read into the record the by-laws of the association and also its declaration of policy. In the declaration of policy it was agreed that the association would not arbitrate the following matters: Limitation of output; limitation of men's earning capacity; fines and restrictions; method of employment; freedom of employment; relation of employees; apprentices; appliances; strikes and lockouts.

#### APPRENTICES THE CHIEF ROCK

"With respect to your attempt to act together with the union, what were the points of differences?" Mr. Briggs was asked.

"Apprentices first," he replied. "This outweighed all others put together. Also, opposition to molding machines on the part of the union, limitation of output, limitation of earning capacity and differential wage rates; and last but not least, the question of the open shop."

Mr. Briggs said that at times there had been consideration of the question as a national rate, but nothing was ever accomplished along this line. He said had the differences merely related to wages they could have been easily settled, but it always ended in being a question of hours and condition of employment. Mr. Briggs admitted there was some contention on the part of members of the association that wages should be different in different localities, but that this matter was generally left to committees.

"Does your association object to collective bargaining with references to wages?" Mr. Briggs was asked. "No, sir," replied Mr. Briggs emphatically.

"Under your by-laws would it be objectionable so far as the members of your association are concerned for an individual to deal with you through a union representative?"

"Members of our association have a perfect right to settle differences through the medium of a union," replied Mr. Briggs. He added that there was nothing in the by-laws of the association that would prevent a member from collectively bargaining with his employees.

#### SOME UNION DEMANDS ILLEGAL

"Do you think the employee has a fair opportunity to get a fair wage where he deals individually with the employer?"

"Very much fairer than when he deals with unions. Only between 8 and 10 per cent. of labor in the United States is organized."

At this juncture Mr. Briggs said that the founders did not object originally to dealing with the unions; but the unions came forward with demands such as, "You shall not do piece work," "You shall not use improved appliances," and "You shall discharge every non-union man." He added that "some of their demands are in the eyes of the law illegal. It is not more laws we need in this country. It is not a question of more legislation. What we want is obedience to our present laws and if this government would compel obedience to our present laws a great deal of turmoil over labor differences would be over."

The only strike Mr. Briggs ever had in his foundry was on account of educating his apprentices. He related how he had started an educational system for the apprentices, which they cordially followed, "and when the shop was 'struck' the only reason given for the strike was that I was educating my apprentices too well."

"The condition of wage earners in the United States is the best in the world," said Mr. Briggs. "This was not brought about by unionism, but by the employer and the employee getting together without the interference of any union. The closed shop is a detriment; the open shop helps the men most."

"Our advice to our members is that they use every effort to settle their differences," said Mr. Briggs. At the present time the association helps its members in the event of a strike, after it has taken steps to ascertain if the member is in the right, by supplying men, by doing the work in some other shop and by paying a stipulated amount for idle floors. "We operate the open shop; we do not ask men whether they are union."

"It has been my observation," said Mr. Briggs, in reply to a question by Commissioner Harris Weinstock, of California, "that a large percentage of the meetings of unions affiliated with the American Federation of Labor are held over or near saloons and there are more members in the saloons than at the meetings."

Thomas J. Hogan, Chicago, secretary Stove Founders' National Defense Association, informed the commission that the position of his association toward the International Molders' Union was diametrically opposite to that of the National Founders' Association. His association had gotten along amicably with the union for 24 years. There had been local disturbances, but these had been settled by conferences.

John P. Frey, editor of the Molders' Journal, Cincinnati, was a candid witness. He said a strike was preferable to arbitration. He declared that conditions are very much better in union than in non-union founders' shops. "I would not be willing to submit anything to arbitration until it was shown that our present methods are at fault," said Mr. Frey. "Generally the atmosphere needs clearing and a strike will clear it." He said that the Newlands act providing for the mediation and conciliation and arbitration of disputes between common carriers and their employees was an unwise act, that in arbitration proceedings one side generally lost and that side would not abide by the decision, and he opposed the idea of entering into an agreement binding both parties to abide by the decision in arbitration proceedings.

W. L. C.

## Core Drying With City Gas

Where illuminating gas can be obtained very cheaply it can be advantageously employed in drying cores, according to a paper on "The Application of Town Gas to Existing Core Ovens," by John R. Hyde, read at a recent meeting of the British Foundrymen's Association. The author experimented in drying his cores every night by gas. The total weight of cores to be dried was about two tons and calculations showed that this meant the evaporation of 42 gallons of water. The results obtained at first were not satisfactory from a financial point of view, for the gas consumed during the 13 hours the oven was in operation cost 4s. 10d. (\$1.09) at 1s. 3d. (31c.) per 1000 cu. ft., as compared with 2s. (49c.) to 2s. 2d. (52c.) with coke. It was found, however, that it was not necessary to keep the gas burning the whole time as, after running the oven up to 200 deg. C. and keeping it at that for six to eight hours, the heat in the brick walls would be ample to finish the work. By arranging a simple automatic device for cutting off the gas supply at the desired time, Mr. Hyde reduced the cost to 2s. 6d. (61c.). Reliability and evenness of drying were decided advantages, as well as greater cleanliness.

## Chilean-American Permanent Exhibition

The Chilean-American Permanent Exhibition will be opened September 18, 1914, in Santiago, Chile. The enterprise has been sanctioned by the Chilean government, and it is expected that it will be opened with America's approval by the presence of Secretary of State William J. Bryan. The initiative in the enterprise was taken by Alfred Hamilton West, until recently American vice consul in Valparaiso, Chile. Mr. West organized the Chilean-American Exhibition Company and obtained from the Chilean government a concession to use for its purposes the great structure in which the Chilean Centennial Exposition was held in 1910. The enterprise has been commended to American manufacturers by the Pan-American Union.

The New York Herald states that more than 600 manufacturers will have their products on sale and display in the exhibition building when it is opened. Manufacturers will be charged a commission only large enough to meet the running expenses. The American headquarters of the Chilean-American Permanent Exposition Company is at the Empire Hotel, New York, and is in charge of Mr. West.

The Buffalo Copper & Brass Rolling Mill, Buffalo, N. Y., on April 1 effected arrangements with H. R. De Milt & Co., 238 Water street, New York, whereby the latter will represent the former in New York City and the metropolitan district. De Milt & Co. will carry a large supply of sheet copper for prompt delivery and will also sell direct for the mill to the copper and brass working trades in their territory. The Buffalo Copper & Brass Rolling Mill makes sheet copper, copper in rolls, copper anodes, sheet brass, rods and wire.

It is stated that the Garford Mfg. Company, recently organized at Elyria, Ohio, to take over the property of the Dean Electric Company, will manufacture automobile accessories, including speedometers and lighting equipment, in addition to the line of telephone equipment that was made by the Dean Company.

Freight cars of steel or steel underframe construction, owned by 88 railroads of the country, number 2,116,790, or 48.8 per cent. of the total. Of these 2,116,790 cars, 20.34 per cent., or 429,253, are all-steel and 24.49 per cent., or 516,874, are in-part-steel cars.

An exhibition of engineering machinery, appliances and supplies, including motion pictures of work under construction, is to be given by the Brooklyn Engineers' Club on the evenings of April 14, 15 and 16, at the club house, 117 Remsen street, Brooklyn, N. Y.

## Steel in Cupola Mixtures

That the admixture of steel improves the strength, fineness and uniformity of grain and corrects the internal shrinkage of cast iron is the contention of H. M. Ramp, in an article on "Condensed Steel Mixture in Machine-Tool Castings" in the American Machinist for March 26, 1914. He says that in this way tensile strength is increased more than transverse strength. According to an accepted formula multiplying transverse strength of cast iron by 8.2 will give its tensile strength, but the average of several hundred tests made by Mr. Ramp on cast iron containing 25 to 50 per cent. steel scrap in the mixture shows that this factor would then have to be 10.4. With mixtures containing 5 to 10 per cent. steel, the multiplier 8.2 will remain unchanged. Iron containing 40 per cent. steel scrap broke at 45,000 lb. per sq. in. with the inch-square transverse bar breaking at 4050 lb. The use of steel increases wearing efficiency and in quantities of from 5 to 10 per cent. tends to correct the evils of internal shrinkage.

Some of the disadvantages in the use of steel scrap in cast iron, according to Mr. Ramp, are: 1. If the silicon runs low it will set up high shrinkage in the gates and risers and in the castings themselves. 2. If the phosphorus is low the iron will lose its life more quickly than iron of the same composition without steel and will not run so well. 3. It develops a greater degree of hardness in the presence of sulphur and appears to absorb more sulphur during the melting process, due however to possibly the use of more fuel necessary to melt and reduce it. 4. It increases the contraction of cast iron from the pattern size.

The size of the steel scrap plays an important part. Steel of as light a section and as uniform in composition as possible should be used. Ten per cent. more fuel is necessary than in an ordinary heat and the steel should always be charged first, for the greatest benefit of the heat is thus obtained and the melting iron dripping from above aids in the dissolving. It is of great importance that the iron be not used until a full charge is collected in one ladle, to avoid the variation which takes place if tapped in small quantities.

## Germany's Exports in February

Germany's exports of iron and steel products in February aggregated 554,000 metric tons, as compared with 501,700 tons in February, 1913. The excess of exports over imports during January and February was 977,000 tons, as against 895,000 tons last year. The export movement in certain products for February and for two months compares as follows with the 1913 figures in metric tons:

	February		Jan.-Feb.	
	1913	1914	1913	1914
Pig iron .....	78,835	49,111	162,786	105,013
Semi-finished steel .....	61,887	66,407	118,775	122,054
Beams .....	39,617	26,081	75,544	51,190
Heavy plates .....	28,107	40,243	60,184	78,654
Wire, rolled or drawn, unpolished .....	15,201	25,212	38,369	46,333
Wire, rolled or drawn, polished .....	8,309	19,616	24,106	34,019
Wire nails .....	7,490	7,057	12,297	12,847
Tubing .....	5,702	21,496	22,374	32,670
Steel rails .....	41,494	41,280	67,962	73,868

Reports on labor and employment conditions in Wisconsin are becoming more encouraging. The Milwaukee Metal Trades & Founders' Association employment office reports that with a 2 per cent. increase in number of members since February 1 more than 500 machine shop and foundry operatives have received employment through the bureau. The present demand is good and steadily increasing. Reports from Racine, Green Bay, Janesville, Beloit, Madison, LaCrosse, Kenosha, Superior, Wausau, Sheboygan, Manitowoc, Waukesha and other industrial centers of Wisconsin indicate that the tide has turned and is now rising.

The Asbestos Protected Metal Company, Beaver Falls, Pa., announces the removal of its New York office to larger quarters at 52 Broadway. P. M. Stewart, district manager, is in charge.

## Wage Reductions Discussed

PITTSBURGH, PA., April 8, 1914.—(By Telephone.)

An informal meeting of the heads of some of the large steel companies was held in the Duquesne Club, Pittsburgh, on Tuesday afternoon, April 7. Those present were E. A. S. Clarke, president Lackawanna Steel Company, Buffalo; John A. Topping, chairman Republic Iron & Steel Company, New York; James A. Campbell, president Youngstown Sheet & Tube Company, Youngstown, Ohio; W. H. Donner, president Cambria Steel Company, Johnstown, Pa., and Willis L. King, president Jones & Laughlin Steel Company, Pittsburgh.

The unsatisfactory condition of the steel trade, both as regards prices and demand, was informally discussed, but no definite action was taken, nor was the meeting called for such a purpose. The present high wages being paid for industrial labor was also discussed in an informal way. It was pointed out that labor employed in industrial plants is being paid the highest wages ever known, while the steel business in this country is practically on a free trade basis. It is recognized that this condition cannot last, and it is very likely that in a short time some of the independent steel companies will take the initiative and a reduction in wages will follow. It was agreed that the outlook for the next few months at least is very far from encouraging.

## The Iron Ores of Missouri

According to the biennial report of the State geologist of Missouri, recently issued, the iron bearing region of that state lies chiefly within the Ozark plateau and covers about 30,000 sq. mi. or half the area of the state. Missouri has produced approximately 10,000,000 tons of iron ore and still contains a vast undeveloped tonnage available under present commercial conditions. The more important types are the specular ores in porphyry, located in southeastern Missouri in Iron and St. Francois counties; the red ores of central Missouri, occurring chiefly in the central Ozarks; the brown ores, found principally in southwest and southeast Missouri and practically undeveloped, and lastly, the undeveloped red ores of the coal measures. The report shows in detail the chemical and physical qualities of each type. The deposits of brown ores are shown to contain ores equal in value to those so extensively produced in the Southern States. These were formerly considered of too low a grade to be utilized. It is now found that they occur at the surface mixed with residual clay and that they can be worked with quite inexpensive equipment. The Pilot Knob and Iron Mountain deposits are reported still to contain a larger reserve than any developed deposit in the State.

At Pittsburgh, last week, the United States District Court rendered a decision in favor of the Carnegie Steel Company against the Cambria Steel Company for alleged infringement of a patent on a metal mixer invented by the late Capt. William R. Jones, who was then general superintendent of the Edgar Thomson works of the Carnegie Steel Company and he assigned all patent rights to that company. Heavy damages were awarded to the Carnegie Steel Company but it is understood that the case will be appealed or a compromise effected, probably the latter. The suit has been in the courts for 15 years or more.

To bring about standards in presenting graphically engineering data, tests, reports, etc., a movement is on foot to have representatives appointed from different societies, engineering, statistical and others, to work out such standards. The movement appears to have been started by Willard C. Brinton, a consulting engineer, of New York City, who will represent the American Society of Mechanical Engineers. Among others who are to cooperate are Dr. Leonard P. Ayres, Russell Sage Foundation, New York, and Dr. A. E. Kennelly, Harvard University and vice-president of the American Institute of Electrical Engineers.

## Electric Furnace Steel Castings Direct From Ore

Since the account in *The Iron Age* of January 8, 1914, of the development of an electric furnace by the Moffat-Irving Steel Company, Toronto, Canada, in which steel castings are made direct from the iron ore, further results have appeared. Prof. T. R. Loudon, of the University of Toronto, in a paper, "Electric Smelting of Iron Ore in Canada," in the January issue of *Applied Science*, which is part of the transactions of the University of Toronto Engineering Society, gives the following tables of tests of the steel recently made in this furnace. The figures relate to unannealed or green steel and the same steel annealed:

Heat	Carbon, per cent.	Unannealed Steel			
		Elastic limit, lb. per sq. in.	Tensile strength, lb. per sq. in.	Elongation in 2 in., per cent.	Elastic ratio, per cent.
167	0.23	53,300	68,950	12.50	77.2
171	0.18	47,500	63,900	15.00	74.3
175	0.31	56,000	82,500	12.50	67.6
178	0.12	49,200	53,700	17.50	91.6
178	0.23	52,500	63,750	13.75	76.3
181	0.35	53,300	84,600	10.00	63.0
184	0.21	59,450	80,050	15.00	74.2
187	0.29	49,950	74,850	15.00	66.7
Same Steel Heat-Treated					
167	0.23	52,300	72,100	26.25	72.5
171	0.18	46,300	66,850	25.00	69.4
175	0.31	53,000	84,500	22.50	62.8
178	0.12	47,050	57,450	35.00	81.8
178	0.23	53,600	70,500	27.50	76.0
181	0.35	53,950	88,400	20.00	61.3
184	0.21	59,200	81,500	22.50	72.6
187	0.29	50,500	76,650	30.00	65.9

It will be seen that not only is the tensile strength for a given carbon content in both the green and annealed condition higher than the average steel casting made by any other process but the elastic ratio is also much higher. The ductility is very good, though naturally a little less than the average, because of the high elastic ratio. The tests were made by Professor Loudon himself and are further testimony to the unusual quality and purity of electric furnace steel.

## Aluminum-Ore Production in 1913

The demand for aluminum in the United States in 1913 showed a steady and rapid growth, according to W. C. Phalen, of the United States Geological Survey. This resulted in a marked increase in the production of bauxite or aluminum ore, the output of which, according to final Survey figures, was 210,241 gross tons, valued at \$997,698, an increase of 50,376 tons, or 31.5 per cent., and \$228,766, or 29.8 per cent., respectively, over the figures for 1912. This growth of the aluminum industry has been marked by healthy expansions and improvements in existing plants, the commencement of work at a new plant in the spring of 1914, and progress in the work on new power sites where largely increased hydroelectric power for use in the reduction of the metal will be in operation in the next few years. The average price of bauxite per gross ton at the mine for 1913 was \$4.75, which differed by only a few cents from the prices recorded for the three previous years.

Screw plates, in which the thread-cutting dies are drop forged from flat bar steel, as differentiated from making them of round steel, have been brought out by the F. E. Wells & Son Company, Greenfield, Mass. The toughening and refining given to the steel by the forging process is emphasized. The products are known as the O. K. screw plates.

A bill has been introduced in the Austrian Chamber authorizing the appointment of engineers as technical attaches to Austro-Hungarian diplomatic posts. Increasingly keen industrial competition among nations is cited, also the fact that Germany, Great Britain, France and Russia are adopting this plan.

The offices of the Eagle Smelting & Refining Works, of which B. Lissberger & Co. are proprietors, heretofore at 740 East Fourteenth street, have been removed to the Woolworth Building, 233 Broadway, New York City.

# The Machinery Markets

Improvement is noted in a few cities, but in general new business of a substantial character is developing too slowly to inspire satisfaction on the part of sellers. This is true despite the recent appearance of two or three good lists of machine tool requirements. In New England orders for many kinds of machinery are scarce, although wire goods are active and silk machinery is in good demand. A good omen is the reinstatement of some railroad shop employees in this territory. In New York there is a large list before the trade for new or used machine tools, but most new prospects are small and scattered. Single tool orders are sufficiently numerous to be encouraging in Cleveland; there is prospect of some good buying for an industrial plant and the makers of auto parts are busy. Conditions show but little improvement in Cincinnati, where one item of interest was a good order from Japan for machine tools. In Chicago a fair industrial expansion has created demand for small lots of equipment, but with machine makers generally trade is unsatisfactory. There is a gain in Milwaukee, but it is not as good as had been hoped for. The machinery market in the central South is quiet and there is little prospect of immediate improvement. Activity is still short of normal in St. Louis, but there nevertheless is a little betterment. In Birmingham the call is good for cotton machinery, but otherwise the trade is quiet. There is an unusually large demand for irrigation machinery in Texas and the outlook is good. In the Pacific Northwest strikes have been settled and machinery houses have felt a steady increase in activity. The machinery trade in San Francisco has been helped out by some belated orders for the United States Navy repair ship Prometheus, municipal railroad shops are coming into the market, miscellaneous machinery, including equipment for canning, lumbering and mining, is active, and there is a better demand for foundry supplies.

## New York

NEW YORK, April 8, 1914.

One of the most extensive and diversified lists of machine tool requirements which the trade has had before it in many months is one lately issued by the C & C Electric & Mfg. Company, Garwood, N. J. Aside from machine tools various other equipment is specified, making about 100 items in all. Scattered, miscellaneous orders continue to make up the bulk of current business. The best demand of recent date has come from makers of automobile parts. New inquiries are not plentiful, but there are many old ones, some of which run back to last November and it is believed that at least some of these will come to an issue before long and with a rush, provided the demand of the railroads for an increase in freight rates is appeased. The Pennsylvania Railroad has a list out for 16 tools required in its freight repair shops at Indiana Harbor. The list appears elsewhere. The following is a summarized list of the requirements of the C & C Electric & Mfg. Company:

- Two motor-driven planers.
- Two radial drills.
- Two rigid turret lathes.
- Three engine lathes.
- One vertical boring and turning mill.
- One vertical tool room shaper.
- One universal grinder.
- Three turret lathes.
- One flat turret lathe.
- Three water tool grinders.
- One tapping machine.
- One hand jointer.
- Two saw tables.
- One hand saw.
- One patternmaker's lathe.
- One horizontal boring and turning machine.
- One 10-ton traveling crane.
- One sliding head upright drill.
- Three single-spindle sensitive drills.
- One 4-spindle sensitive drill.
- One 2-spindle sensitive drill.
- Two heavy duty lathes.
- Two heavy duty milling machines.
- One heavy duty shaper.
- One universal cutter and reamer grinder.
- One sliding head upright drill.
- One surface grinder.
- One 6-spindle drill press.
- One low swing lathe.
- Six presses.
- One high speed hack saw.
- One 60-ton hydraulic press.
- Six milling machines.
- Two toolmakers' lathes.
- One arbor press.
- One centering machine.

One disk grinder.  
Twenty bench vices.

The company asks for bids on both new and used machines, specifying in the case of the latter that they shall be in good repair and guaranteed, in which event they will be considered preferable to new tools.

The Hasselbarth-Whiton Company, Utica, N. Y., has been incorporated for the manufacture of beds and hospital supplies. The capital stock is \$50,000. The incorporators are C. O. Hasselbarth, R. P. Whiton and F. N. Furber.

The Linde Air Products Company, Buffalo, N. Y., manufacturer of oxygen, acetylene and cutting and welding devices, has purchased a site at Roy street and the Southern Railway, Atlanta, Ga., and will build a factory 200 x 218 ft. William F. Barrett, Chicago, is works manager.

The Seabury Mfg. Company, Jamestown, N. Y., manufacturer of tabourets, cabinets, etc., is in the market for elevator equipment and special metal shapes, etc.

The Mica Insulator Company, 293 Dock street, Schenectady, N. Y., will erect a \$72,000 factory on Villa road. W. L. Stoddart, 30 West Thirty-eighth street, New York City, is the architect.

The taxpayers of Spencerport, N. Y., have voted to issue bonds for installing an electric light plant.

The Warsaw Construction Company, Warsaw, N. Y., has been organized to do a steel and concrete construction business. It is composed largely of men connected with the Warsaw-Wilkinson Company, manufacturer of agricultural implements. W. C. Gouinlock is president and E. R. Wheeler, secretary.

The city of Albany, N. Y., will soon take bids for the construction of a sewer and disposal plant to cost \$1,000,000. Isadore Wachtsman is secretary of the board of contract and supply.

The Turner Construction Company, 11 Broadway, New York City, has been awarded the general contract for the construction of the factory for the American Ever Ready Company, in Long Island City. Work has been started.

The N. Reisler Iron Works, 801 East 137th street, New York City, has been incorporated with a capital stock of \$10,000 and will take over the business of N. Reisler, fabricator of iron and steel and ornamental metal worker.

The town of Albion, New York, has voted \$65,000 for improvements to the water works system.

The J. H. Mead Company will build a factory 40 x 100 ft., one and one-half stories, at Delawanna, N. J.

F. H. Calvert, city clerk, Asbury Park, N. J., will receive bids until April 13 for air compressors, pumps, etc.

## Philadelphia

PHILADELPHIA, PA., April 6, 1914.

White & Bro., Inc., Hedley and Richmond streets, Philadelphia, smelters and refiners, will build an addition for the manufacture of copper and brass ingots.

Barclay, White & Co., architects, have called for bids on a one-story factory, 100 x 153 ft., brick and steel construction, for the American Road Machine Company, Arcade Building, Philadelphia.

Franklin & Co., Crozer Building, Philadelphia, engineers, have drawn plans for a factory, 19 x 72 ft., four stories and basement, reinforced concrete construction, for Walter H. Jarden.

W. F. Metzger, 629 Market street, Philadelphia, will build a factory at Thirteenth and Cherry streets, 78 x 120 ft., nine stories, reinforced concrete construction.

The S. Morgan Smith Company, York, Pa., manufacturer of water wheels, power machinery, etc., reports that the recent fire at its plant was confined to one end of the foundry. No machinery was destroyed. The greatest loss was to core boxes and patterns.

## New England

BOSTON, MASS., April 7, 1914.

The machinery people are finding orders scarce, and some of their customers report conditions as being less favorable when compared with January. The slump is by no means universal. Business is good with some wire products. In certain lines of textile machinery the builders are curtailing, but as a whole the demand is far greater than the manufacturers had expected. The demand for silk machinery is so great that the shops which make it a specialty are rushed with orders, and in some instances are working overtime. To return to the machine tool industry there are exceptions to the rule of poor business. The books of one maker of manufacturing drilling machines show a very nice lot of orders received in the last three weeks. These machines will go to a wide variety of manufacturing industries in various parts of the country. The New York, New Haven & Hartford Railroad has re-employed several hundred men recently laid off at its repair shops at Readville, Mass. The Lake Torpedo Company, Bridgeport, Conn., announces that reorganization has been completed and that the capacity of its works will be increased. The company builds submarine boats.

Announcement is made that the Phillips Insulated Wire Company, Pawtucket, R. I., is contemplating the erection of an additional building, irregular in shape, 300 ft. in length, tapering in width from 210 ft. to 60 ft. three stories and basement. The plans, as announced, also include a large power plant, the purpose being to provide for electric drive throughout the works. The estimated increase in capacity is about 50 per cent.

The Wright Wire Company, Worcester, Mass., is planning to increase its works at Palmer, Mass. The company finds it necessary to add to its output of wire rope and that department will be enlarged. The wire drawing mills will be given a correspondingly greater capacity.

Additions to manufacturing facilities in New England include the factory of the Osborne & Cheeseman Company, Ansonia, Conn., 80 x 120 ft., five stories; factory of Joseph Massack, Jr., Bristol, Conn., 28 x 60 ft., two stories, to replace plant recently destroyed by fire; American Paper Goods Company, Kensington, a suburb of New Britain, Conn., factory 64 x 130 ft., four stories, and a one-story structure 42 x 86 ft.; David H. Clark Company, New Haven, Conn., one-story factory, 35 x 135 ft.; McLane Silk Company, New York, factory at Turners Falls, Mass.; C. H. Alden Company, Abington, Mass., addition to factory; C. H. Stoddard Rubber Tire Works, Worcester, Mass., factory at Millbury, Mass.; James Huggins & Sons, factory at Medford and Commercial streets, Malden, Mass.; Eaton, Crane & Pike Company, Pittsfield, Mass., addition to mill, 42 x 150 ft., three stories and basement.

The Automatic Polishing Machine Company, Meriden, Conn., has been incorporated with Simon Kumkumian as president, N. J. Downey secretary and W. H. Gaines treasurer.

## Chicago

CHICAGO, ILL., April 4, 1914.

The business developing in this market is most discouraging to makers of machinery. There has been a fair expansion of industrial operations requiring new equipment, but in most cases such requirements are limited to a few tools for each buyer. The sales expense on such orders ordinarily runs high for each tool sold, especially where selling is as keenly competitive as at present. The expected placing of orders for tools on its recent list by the Louisville & Nashville Railroad is still hanging fire. The one bright feature that has come to light of late is the list of the requirements of the Pennsylvania Lines, West of Pittsburgh, for the freight repair yards at Indiana Harbor, Ind., which are as follows:

- One heavy pattern 4-ft. arm radial drill, motor drive.
- One double end emery tool grinder, motor drive.
- Two 48-in. car wheel boring mills, motor drive.
- One 400-ton 48-in. car wheel press.
- One double head axle lathe, motor drive, with crane.
- One 20-in. sliding head, upright drill, motor drive.
- One extra high power car wheel lathe for wheels up to 42 in. diameter, motor drive.
- One 44-in. motor driven car wheel grinder.
- One 2-in. forging and heading machine.
- One 1½-in. forging and heading machine.
- One double end punch and shear, 25-in. depth of throat, capacity 1¼-in. x 1-in. steel, motor drive.
- Two motor driven 2-in. triple head bolt threading machines, motor drive.
- One 200-lb. Bradley hammer, motor drive.
- One No. 12 Champion type power hammer, motor drive.

All motors are to be 220 volt, 60 cycle, equipped with starter and fuse.

Plans are being prepared by Thomas McCall, 30 North La Salle street, Chicago, for a six-story manufacturing building 150 x 200 ft., to be erected at a cost of \$140,000.

The American Brass & Bronze Company, Chicago, has been incorporated with a capital of \$2000 by Rudolph and Mary Vokoun, Peter Straka and Antonie Straka.

The Temple Pump Company, Chicago, has filed notice of a change in its name to the Temple Mfg. Company.

The Alton Brick Company, Alton, Ill., has increased its capital stock from \$250,000 to \$3,000,000 for the purpose of extending its plants and operations.

The General Roller Bearing Company, East St. Louis, Ill., has been incorporated with a capital stock of \$10,000 and will equip a shop for the manufacture of roller bearings.

It is rumored that the Kansas City Manual Training School, Kansas City, Mo., has purchased the entire list of tools that has been before the trade for several weeks, although this report cannot be confirmed through firms who were bidding on the equipment.

The Village Council, Atkinson, Neb., will receive bids until April 15 for constructing a waterworks system.

D. C. Kline, recorder, Sanborn, Minn., will receive bids until April 15 for waterworks system.

The town of Moorhead, Minn., will purchase a 500 kw. turbine for its electric light plant at an estimated cost of \$16,000.

The Diamond Crystal Salt Company, Detroit, Mich., will erect an addition to its factory at an estimated cost of \$140,000.

The board of public works, Highland Park, Mich., will receive bids until April 13 for constructing a water supply system.

## Milwaukee

MILWAUKEE, WIS., April 6, 1914.

The volume of machinery business is slowly gaining, but not nearly so rapidly as manufacturers hoped for. Tool business still leads the list and builders are booking some good though small orders. General conditions in Milwaukee are reflected in the construction record for March, which shows a considerable gain over March, 1913. The first quarter of 1914 shows a gain of \$134,561 over the corresponding period of 1913 and tops all previous records. All through the State industrial development and expansion seem to be keeping pace with previous years.

The Line Material Company, South Milwaukee, Wis., organized three years ago to manufacture outside electrical supplies, malleable arms and brackets, and general lighting materials, has purchased the former Hansen box factory property at South Milwaukee and when remodeled will move from its present quarters in the Stowell Mfg. & Foundry Company's plant. Frederick L. Sivy is president.

The Milwaukee Structural Steel Company, Nineteenth street and St. Paul avenue, Milwaukee, has been granted a permit for the erection of a shop building to cost \$5000.

The Affiliated Manufacturers' Company, Caswell Block, Milwaukee, Wis., is planning a large production of kerosene vaporizers under contract with Milwaukee machine shops. By a similar arrangement it is now marketing a large production of ferroform piston molding machines, friction clutch pulleys, gas engine governors and other specialties. G. D. Harris is vice-president.

M. S. Matteson, Unity, Wis., will build a garage and general commercial machine shop to cost \$7500.

Bids are now being taken by G. W. Kuehlthaw, proprietor of the West Bend Light, Power & Heating Company, West Bend, Wis., for the work of rebuilding and altering the former Kuehlthaw flour mill into a hydroelectric lighting plant and steam heating station for commercial purposes.

The general contract for the construction of the electric and gas fixture factory of the J. Massino Mfg. Company, 740-742 Third street, Milwaukee, was awarded to the Dahlman Construction Company, Milwaukee. Its dimensions are 30 x 106 ft., three stories.

J. Roth, architect, Milwaukee, closes bids April 11 for the construction of a factory building on North Water street, Milwaukee, to be 30 x 60 ft., two stories, fireproof construction. The name of the owner is withheld for the present.

The Kramer Governor Company, capital \$125,000, has been organized by Benjamin G. Kramer, president of the B. G. Kramer Company, 243 Lake street, Milwaukee, to manufacture a general line of governors for gasoline engines as applied to motor vehicles. Max Gessler and J. H. Hurley are associated with Mr. Kramer. Some additional equipment will be purchased for the Kramer plant, which will be headquarters for the new company.

The Automatic Trip Carrier Company, Rice Lake, Wis., manufacturing dairy and barn equipment, proposes to increase its capital stock by \$30,000 to \$50,000 and make additions to the plant as local capital becomes interested.

The Keller Pneumatic Tool Company, Fond du Lac, Wis., has started operations and is producing a complete line of pneumatic tools of all kinds. Present requirements of equipment are filled, but the company expects to make additional purchases as needed. Julius Keller is president.

The Price Mfg. Company, Fond du Lac, Wis., organized with \$100,000 capital, will engage in the manufacture of silver, nickel and bronze plated ware. Arrangements are being made for a factory and equipment. John R. Price is president.

H. B. Berner, Antigo, Wis., will build a garage and machine shop, 43 x 68 ft., two stories.

The Citizens' Association of Manitowoc, Wis., has purchased two lots and donated them to the Aluminum Goods Company for a factory addition, to be erected some time this year. The company only recently completed a large addition but is again cramped for room.

Henry Werner & Sons, Bloomer, Wis., are preparing to erect a garage and machine shop.

The woodworking plant of the Buckstaff-Edwards Mfg. Company, Oshkosh, Wis., was damaged \$100,000 by fire. Work on rebuilding and re-equipping will begin within two weeks.

The Racine Mfg. Company, Racine, Wis., wood and metal automobile bodies, has had plans prepared for a \$50,000 addition, to be 100 x 281 ft., four stories, brick construction. It will be equipped for the construction of limousine and other closed body types and the gen-

eral blacksmithing work of the company, which is one of the largest of its kind in the world.

Articles of incorporation have been filed by the Coleman-Pound Light & Power Company, Coleman, Wis., capital stock \$10,000, to construct and operate commercial light and power plants at Coleman and Pound, Wis. D. F. Smith is president.

The Butterfield Motor Car Company, Fairchild, Eau Claire county, Wis., is opening a garage and repair shop.

The Menasha Motor Car Company, Menasha, Wis., will build a garage 50 x 120 ft., two stories, and equipped for general automobile and machinery repair work.

The Deicher & Arndt Company, Plymouth, Wis., recently organized with \$50,000 capital, will erect a garage and machine shop and conduct a general repair business. Adam Deicher is president and manager.

The Manitowoc Aluminum Specialty Company, Sixth and York streets, Manitowoc, Wis., which has increased its capital stock from \$25,000 to \$50,000, is preparing to increase its production. Walter Spindler, Manitowoc, secretary-treasurer, has taken a large financial interest. Emil Krug is president. Plans for expansion are now being made.

T. H. Robinson and Joseph Veno, Washburn, Wis., will erect a garage and machine shop building for their own use.

The Delavan Lake Boat & Engine Company, Delavan, Wis., has broken ground for a shop building, to be used for garage and repair shop in addition to boat and engine manufacture. W. E. Pfeffer is proprietor.

The Union Bag & Paper Company, Kaukauna, Wis., is preparing to make improvements to its hydroelectric plant and works to cost \$50,000 or more.

## Cleveland

CLEVELAND, OHIO, April 6, 1914.

Encouraging reports continue to come from dealers in respect to demand for single tools, which is more active than a few weeks ago. However, outside of single tool orders the demand is very light. It is expected that the Wallace Tractor Company will buy equipment this week for its new plant in this city. This inquiry has been pending for some time. Inquiries for small equipment for improving power plants is fairly active. Makers of automobile parts have become quite busy. Orders that were held up early in the year have recently been placed. This business has helped foundries that do automobile work, but with jobbing foundries conditions continue quiet.

The Osborn Engineering Company, Cleveland, has received bids for a new plant to be erected by the Bay View Foundry Company, Sandusky, Ohio. Plans for this plant were prepared several months ago, but the project was held up at that time. The company now intends to go ahead with its building plans. There will be two main buildings with total dimensions approximately 250 x 275 ft., and a power house. The plant will be of brick and steel construction.

The Cleveland Die Tool & Engineering Company is the name of a new concern which will establish a plant on Carnegie avenue, near the Pennsylvania Railroad. It expects shortly to purchase the required machinery equipment.

The plant and other assets of the J. D. Smith Foundry Supply Company, Cleveland, will be sold at public sale April 10 by George E. Hagenbuch, trustee in bankruptcy.

The Cleveland Railway Company will erect a shop inspection building of steel, brick and concrete construction, 52 x 184 ft.

The Cleveland Castings Pattern Company and the Wood & Spencer Company have moved into their new plant at 1930 East Sixty-first street. It is a four-story brick, steel and reinforced concrete structure, 60 x 100 ft. The Wood & Spencer Company expect shortly to buy some additional machine tool equipment for building special machinery.

The Federal Brass Mfg. Company, Cleveland, which has been incorporated with a capital stock of \$25,000, will take over the business of the National Brass Company, 1000 Champlain avenue, maker of plumbers' brass goods. It is stated that a new plant will eventually be built.

The Cleveland Cycle Car Company, Cleveland, has been incorporated with a capital stock of \$200,000 to manufacture cyclecars and automobiles. The company is now located at Luther avenue and East Fifty-ninth street, but it expects to build a new plant.

The Dauch Mfg. Company, Sandusky, Ohio, has been incorporated by J. J. Dauch, and others, with a capital stock of \$800,000. It will manufacture farm tractors.

The Marsh-Brightman Company, Sandusky, Ohio, recently incorporated with a capital stock of \$50,000 to manufacture nuts, has leased the plant of the Sandusky Foundry & Machine Company and is fitting it up to meet its requirements.

The Hinde & Dauch Paper Company, Sandusky, Ohio, will erect a four-story concrete and steel factory. Albert N. Allen, architect, Cleveland, will prepare plans.

The Defiance Box Company, Defiance, Ohio, will shortly begin the erection of a wheelbarrow factory to replace one recently burned.

The Gramm-Bernstein Company, Lima, Ohio, will enlarge its plant by the erection of a brick and steel addition, 48 x 110 ft., to be used for the painting and assembling department.

The O. C. Barber Mining & Fertilizer Company, Howenstine, Ohio, will erect an addition to its hydrate plant.

The Braun-Hoff Electric Company, Canal Dover, Ohio, is the name of the new concern which has recently been promoted to manufacture small motors. It is stated that sufficient stock has been subscribed to assure the establishment of the plant.

The Ohio Road Machinery Company, Oberlin, Ohio, will enlarge its plant by the erection of an addition which will double its present capacity.

The Lorain Brass & Bronze Foundry Company, Lorain, Ohio, has been formed by E. M. Cable, W. N. Harding, and others, to manufacture brass and bronze castings.

The city of East Palestine, Ohio, will spend \$100,000 for the construction of a sewerage system and disposal plant.

## Cincinnati

CINCINNATI, OHIO, April 6, 1914.

The past week has brought about no change in the general situation in all manufacturing lines. The possible exception is the report from one machine tool manufacturer on the receipt of an excellent order for lathes from its agents in Japan; another firm received a nice order from English customers. Domestic business continues quite dull with both the machine tool builders and dealers. Many inquiries have been on file for months, but only a few single tools are being sold. Manufacturers of engineering specialties report very quiet conditions with both the export and domestic trade. There is no improvement in the situation as to the jobbing foundries, who are operating to only 50 per cent. of capacity, although a few exceptions may be noted.

It is announced that Val. Duttonhofer, Jr., Eighth and Sycamore streets, Cincinnati, is having plans prepared for an eight-story power building to be erected on Sixth street. The company will install its own power plant. Work on the building will not commence until late in the summer.

The Ohio Veneer Company, Cincinnati, is having plans prepared for a large factory building to be erected on a site recently secured in the Camp Washington district. Equipment details are not yet available. The company's present plant is at 2624 Colerain avenue.

Work has been started on the branch plant of the Paragon Refining Company, West End, Cincinnati. The company's main office is at Toledo, Ohio.

Several local building firms are figuring on plans submitted for a branch assembling plant to be erected at Indianapolis, Ind., by the Ford Motor Car Company, Detroit, Mich.

Walter G. Franz, Union Trust Building, Cincinnati, has been commissioned by the city of Norwood, Ohio, to draw plans for an extension of the water works and lighting plants. No equipment details have been given out.

Rees & Strong, Columbus, Ohio, is a new partnership formed to erect a building for the manufacture of foundry specialties. The proposed structure will be 60 x 100 ft., one story, and of brick construction. J. J. Rees may be addressed for particulars.

The C. & E. Wolfe Shoe Company, Columbus, Ohio, will rebuild its plant recently destroyed by fire.

It is rumored that John D. Miller, Charleston, W. Va., contemplates erecting a foundry at Lancaster, Ohio, for the manufacture of carwheels and other railroad specialties. No definite plans have yet been formulated.

The Thiele & Baker Mfg. Company, London, Ohio, has been incorporated with \$25,000 capital stock to manufacture metal fencing. S. S. Baker is one of the incorporators.

## Indianapolis

INDIANAPOLIS, IND., April 6, 1914.

The Cement Mfg. Company, Indianapolis, has been incorporated with \$25,000 capital stock, to manufacture cement. The directors are H. E. Goodwin, L. T. Stebbing and W. D. Headrick.

Johnson Brothers, Bloomington, Ind., are to build a creamery and ice manufacturing plant to cost \$40,000.

The Seymour Chair Company, Seymour, Ind., has increased its capital stock \$10,000.

The city of Huntington, Ind., will spend \$30,000 in improving and enlarging its municipal lighting plant.

The American File Renewing Company, Anderson, Ind., has been incorporated with \$25,000 capital stock, to manufacture files. The directors are G. A. Lambert, James C. Mitchell and H. P. Lambert.

The plant of the Montgomery Brick & Tile Company, Washington, Ind., was destroyed by fire April 3. The loss, mainly on machinery, was \$12,000.

The chamber of commerce of Anderson, Ind., has closed a contract by which the plant of the American Safe & Lock Company will be moved from Cincinnati.

The American Valve Company, Indianapolis, Ind., manufacturer of flushing and pressure tank valves, etc., has taken over the business of the American Valve & Tank Company. It will increase its capitalization and operations will be started in 30 to 60 days.

## St. Louis

ST. LOUIS, MO., April 6, 1914.

The tendencies in the machine tool market seem slightly improved over last report; but the business developing is still short of normal. Dealers are disappointed. Inquiries continue below a satisfactory level, both from the country and the city. There are, however, some evidences of improvement that are encouraging. Most of the business for the moment is from the country, but whether this is a spasmodic development or not is yet to be determined. Second-hand tools are moving in reasonable parallel with new machines.

The St. Louis-Clover Leaf Elevator Company, St. Louis, has been incorporated with a capital stock of \$20,000 by W. H. Wright, and others, and will equip a grain elevator.

The Automatic Register Company contemplates the establishment of a factory in St. Louis. C. H. Robinson, Chicago, its attorney, has plans for the work.

The Automobile Clearing House, St. Louis, has been incorporated with a capital stock of \$25,000 by W. C. Shields, and others, to equip a garage and repair plant.

The Finaline Mfg. Company, St. Louis, has been incorporated with a capital stock of \$20,000 by T. W. Carter, and others, to manufacture a varnish protector.

The George P. Plant Milling Company, St. Louis, will erect and equip an elevator to cost about \$32,500 for equipment.

The Herold Piano Company, St. Louis, has been incorporated with a capital stock of \$40,000 by George H. Wagner, and others, to manufacture pianos.

The Byrd-Matthews Lumber Company, St. Louis, is in the market for electrical equipment, including motor and generator.

The B. L. Fry Mfg. Company, St. Louis, has been incorporated with a capital stock of \$10,000 by B. L. and John L. Fry and R. M. Homer to manufacture tools.

The Cast Steel Pilot Company, St. Louis, has been incorporated with a capital stock of \$60,000 by Arthur T. Morey, and others, to manufacture steel pilots.

A cement plant with a daily capacity of 2000 bbl. will be built at Kansas City, Mo., by the Iola Portland Cement Company, Iola, Kan., at a cost of about \$1,000,000.

Hetzler Brothers, Columbia, Mo. will equip a refrigerating plant at a cost of about \$30,000. Robert M. McCandlish, Midland Building, Kansas City, Mo., is the architect.

The National Concentrator Company, Joplin, Mo., has been incorporated with a capital stock of \$10,000 by T. E. H. Urmston, F. F. Smith and Walter Thomas to manufacture ore concentrators.

The Hayward Wrench Company, Springfield, Mo., has been incorporated with a capital stock of \$100,000 by H. H. and Homer Hayward and Lewis T. Dunaway to manufacture wrenches.

The Lyman-Sawyer Mfg. Company, Kansas City, Mo., has been incorporated with a capital stock of \$20,000 by F. P. and J. J. Lyman and F. M. Sawyer to do general manufacturing.

The Western States Lumber Company, Kansas City, Mo., has increased its capital from \$20,000 to \$50,000 and will extend its operations.

The J. S. Sullivan Saddletree Company, Jefferson City, Mo., has increased its capital stock from \$10,000 to \$150,000 for the purpose of increasing its factory equipment and establishing new plants.

The St. Joseph Ice & Mfg. Company, St. Joseph, Mo., has increased its capital from \$125,000 to \$200,000 for the purpose of extending its plants, etc.

The Ever-Best Mop Company, East St. Louis, Ill., is preparing to erect a factory. Joseph N. Keys is president.

R. L. Rodgers and others, East St. Louis, Ill., have plans for the immediate equipment of a large bottling plant involving an investment of about \$20,000.

The Hammar Brothers White Lead Company, East St. Louis, Ill., with general offices in St. Louis, Mo., recently burned with a loss of about \$250,000, will rebuild and re-equip its plant.

Announcement is made that the Iron Mountain Railroad will equip a part of its line with electric power plant and motor cars.

The Augusta Cooperage Company, Augusta, Ark., will rebuild the cooperage plant recently burned with a loss of about \$25,000.

A blacksmith shop and woodworking plant will be equipped at Junction City, Ark., by W. M. Williams, who is in the market for the necessary equipment.

The town trustees of Stigler, Okla., will receive bids until April 20 for water works and sewer system apparatus.

Chaston & Cathey will equip a garage and repair plant at Tulsa, Okla., the machinery estimated to cost \$12,000.

The Oklahoma & Texas Ice Refrigeration Company, Ardmore, Okla., has been incorporated with a capital stock of \$60,000 by H. S. Cox and others.

The Ardmore Electric Railway Company, Oklahoma City, Okla., will build a plant at a cost of about \$150,000. George A. Craven and others are interested.

C. T. Wright, Celina, Tex., and Geo. I. Baldwin, Dallas, Tex., will build a cold press oil mill at Tishomingo, Okla., to cost about \$25,000.

The Central Lumber Company, Brookhaven, Miss., has bought the Brister mill at Bogue Chitto, and will make improvements. The power plant will be remodeled.

The Edward Hines Lumber Company, Chicago, Ill., will rebuild its mill at Orvisburg, Miss.

The Ponchatoula Veneer & Package Company, Ponchatoula, La., will equip a box plant. Andrew Pussey and others are interested.

The Drewes Sugar Company, New Orleans, La., has been incorporated with a capital stock of \$100,000 by Otto M. Drewes, and others, and will equip a sugar mill.

Clark & Beckley, Doyle, La., will equip a sawmill plant at Walker, La., at once.

Sawmill and logging equipment will be installed by Howard Cole and J. E. Henderson, 1 Wall street, New York, at Lottie, La.

An electric light plant is to be built by the city of Breaux Bridge, La., under the direction of Mayor C. C. Rees.

The mayor, Eunice, La., will receive bids until April 16 for an electric light plant.

## The Central South

LOUISVILLE, KY., April 6, 1914.

The machinery market is still quiet, with little immediate prospect of improvement. The number of new enterprises which have been reported is only fair, and few projects of large size have been noted. Small orders are being received in some volume, these being practically the only kind to occupy the attention of manufacturers. Most of these are for immediate delivery. Boilers are not in demand, except in smaller sizes. Electrical equipment is moving slowly in practically the entire South. Farm engines are being sold for summer work, but these are of small power.

The Brunswick Creosoting Company, which is being organized by Louisville men, will purchase equipment for a plant to be erected at Brunswick, Ga. James B. Wilson, of the Kentucky & Indiana Terminal Railroad Company, Louisville, will be manager. The company will be capitalized at \$150,000.

The J. P. Will Company, Louisville, is going ahead with the purchase of equipment for its planing mill, destroyed by fire, which was reported several weeks ago. The machines will be motor-driven.

Motors are to be purchased by the Purified Petroleum Products Company, 411-12 Louisville Trust Building, Louisville. Special equipment has already been purchased.

The National Ice Cream Company, Louisville, is preparing to establish a skimming station at Elizabethtown, Ky. Boilers and other equipment will be needed. C. I. Hoopes is manager.

J. Schwarzwald & Sons, Inc., Louisville, tight coopers, are preparing to erect a plant. Some of the equipment is yet to be purchased. It will be electrically operated.

Metal-working machinery, electric motors and boilers will be purchased by John Rohrmann, 59 American National Bank Building, Louisville, who will establish a factory for the manufacture of small ice machines. It will be located at Highland Park, a suburb.

The American Oak Leather Company, Louisville, will shortly purchase electric power equipment for its Louisville tannery.

Joseph B. Jett, Carrollton, Ky., will purchase ice manufacturing and refrigerating equipment.

The J. T. Polk Company, Greenwood, Ind., is considering the establishment of a canning plant at Columbus, Ky. A factory building, 60 x 150 ft., would be required to house the equipment that is to be purchased. Harry McCartney, secretary, is in charge.

Oil-well equipment will be purchased by the Petroleum Oil & Gas Company, which is starting operations near Scottsville, Ky. Goss & Day, Greencastle, Ind., will also require equipment for operations near Scottsville.

J. Elliott Hall, Bluefield, W. Va., may install a gas plant at Hopkinsville, Ky. R. E. Cooper, president of the Business Men's Association, Hopkinsville, has information and details.

The Dawson Springs Bottling Company, Dawson Springs, Ky., is in the market for boilers, engine, pumping and bottling machinery and tanks.

An ice plant at Kuttawa, Ky., has been bought by Alexander Brothers & Co., Cadiz, Ky., who will operate and enlarge it.

The Shepherdsville Electric Light, Water & Cold Storage Company, Shepherdsville, Ky., is being organized with a capitalization of \$10,000. S. W. Bates is president. The company will purchase a 5-ton ice machine and cold storage equipment. The new company will take over a lighting plant at Shepherdsville and will probably enlarge it.

The Campbellsville General Utilities Company, Campbellsville, Ky., will build a water works at Pittman creek. A filter plant will be included. H. K. Bell, Lexington, Ky., is engineer.

A. R. Tinsley, Pineville, Ky., will purchase an excelsior machine.

S. E. Patton, Jackson, Ky., will install a veneer plant, which will be equipped with saws for the manufacture of oak veneers.

E. Tripp & Co., Indianapolis, Ind., will purchase engines, pumps and other equipment for operating a number of wells near Scottsville, Ky.

The E. G. Willingham Company, Memphis, Tenn., manufacturer of hardwood, will erect a mill.

The Nashville branch of Swift & Co. will erect a new refrigerating and packing plant. H. W. Phelps is local manager.

The Knapp School of Country Life, Nashville, Tenn., will establish a \$400,000 farm school for which engines and farm equipment will be needed.

J. R. Hudson, Camden, Tenn., will add new equipment to his cotton gin.

The Southern Glove Mfg. Company, Morristown, Tenn., has been organized by D. A. Pless, and others, and a plant with a daily capacity of 500 pairs is to be established.

The International Wheel Company, Nashville, Tenn., which was recently incorporated with \$10,000 capitalization, will erect a plant for the manufacture of a new automobile wheel. Alexander Haas is president.

The Murfreesboro Water Company, Murfreesboro, Tenn., incorporated with capital stock of \$100,000, has taken over the local water works and will improve it. James R. Jetton is president.

The Nashville Cold Storage & Ice Company, Nashville, Tenn., is being organized with \$500,000 capital stock. A 150-ton machine will be bought. The refrigerating equipment will have 5000 tons capacity. Four 800-hp. boilers will be purchased.

## Birmingham

BIRMINGHAM, ALA., April 6, 1914.

Outside of the active demand for cotton working and ginning machinery and agricultural equipment, including small gasoline engines, the machinery and hardware trades are extremely quiet. Structural operations continue on a large scale and call for supplies in that line. Improvement in the coal business, owing to the demands for summer stocking up, has slightly stimulated the buying of engines and boilers. The general opinion in machinery circles is that the revival of trade will continue to be slow.

The plant of the Stockham Pipe & Fittings Company, Birmingham, was burned with a loss of \$50,000. The owners intend to rebuild.

The Bettie Francis Cotton Mills, Alexander City, Ala., has been organized, with Benjamin Russell, president. It is proposed to build a cotton mill with 6000 spindles.

The Alabama Lime & Stone Company, Paint Rock, Ala., intends to manufacture agricultural limestone, hydrated and bulk lime, etc. Boilers, engines, crushers, etc., are to be purchased. H. M. Smith, Rome, Ga., is secretary.

The Morrison Frogless Switch Company, Birmingham, will build a factory at Tuscaloosa, Ala., for the manufacture of frogs, switches and kindred appliances. Bids for machinery, as well as construction, will be considered June 15.

The Canal Export Coal Company, Birmingham, has been organized by R. H. Elliott, and others. It pro-

poses to develop mines with a daily capacity of 1000 tons.

It is understood that the Sylacauga Fertilizer Company, Sylacauga, Ala., will rebuild its fertilizer plant which was burned.

P. H. Lewis, Alexander City, Ala., will establish an ice factory.

J. A. Hough, and others, Union Springs, Ala., propose to build an ice factory.

The Atlantic States Coal & Coke Company, Savannah, Ga., will build a coaling station on Hutchinson's Island. The equipment will include coal chute and trestle. This company is controlled by the Carolina, Clinchfield & Ohio Railroad.

A factory to manufacture plows and other farm implements will be built by the Diamond King Plow Company at Cordele, Ga. E. B. James and E. R. Crum are the incorporators. The capital stock is \$50,000.

The Columbus Gaslight Company, Columbus, Ga., will expend \$50,000 in improvements.

The Columbus Power Company, Columbus, Ga., will spend \$200,000 in plant improvements.

The Oconee Milling Company, Milledgeville, Ga., will build a hydroelectric plant in place of the one recently burned.

The Osceola Supply Company, Bassenger, Fla., will manufacture X-Ray fertilizers. The capital stock is \$100,000 and the incorporators are C. W. Hilliard, R. L. Pearce, and others.

The bond trustees of Wauchula, Fla., will receive bids until April 25 for constructing a water works and sewer system.

## Texas

AUSTIN, TEXAS, April 4, 1914.

An unusually large demand for irrigation machinery is promised this spring and coming summer, according to the reports received by dealers. Much is already being done in this line. Besides the larger irrigation projects now on foot many smaller pumping plants will be established. Good rains, covering most of the State, have fallen in the last few days and crops are well started.

The Eagle Lake Mfg. Company, Eagle Lake, is constructing a cold storage plant.

P. A. Fitzhugh, Houston, and associates, will build a 100-ton cotton seed oil mill at Texas City, to cost \$200,000.

The Terrell Electric Light Company will rebuild its light and power plant which was recently destroyed by fire.

The chamber of commerce is promoting the construction of a cotton gin at Denison.

Bonds in the sum of \$320,000 were recently voted for the construction of a water works plant and distributing system at Sweetwater.

The San Antonio Gas & Electric Company will double the capacity of its power plant. The building will be enlarged and an additional generator of 5000 kw. capacity installed. E. E. Eysenback is general manager.

J. D. Sugg, owner of the San Angelo Street Railway Company, has adopted plans for improvements to cost approximately \$150,000. He will erect a power plant.

The Wichita Mill & Elevator Company, Wichita Falls, has been organized with a capital stock of \$300,000. The incorporators are M. Lasker, E. L. Lasker and Frank Kell.

The Uvalde Electric Light Company, Uvalde, will install additional machinery.

Thomas Bell, Brady, Texas, and associates, have begun the construction of a cotton compress at Corpus Christi to cost \$50,000.

The People's Gin Company will construct a cotton gin at Rockwell. T. B. Ridgell is interested.

The India Gin Company, India, Texas, has been organized to erect a cotton gin. M. A. Carpenter is interested.

The Gulf Pipe Line Company, Timpson, is constructing an oil pumping station at a cost of \$100,000.

Hanstrom & Tinning, Hutto, will construct an electric light plant.

The Delta Land & Timber Company, Houston, will award contracts for the construction of a saw mill and lumber dressing plant. Bids will be received by I. K. Fetty and Charles Keith, Kansas City, Mo., on behalf of the company. The mill will have a capacity of about 100,000 ft. per day. The buildings will be of steel and concrete construction.

The Creasey Rotary Filer Company, Ballinger, will construct a plant for the manufacture of an automatic rotary gin filer.

The Cuero Ice & Bottling Works, Cuero, is equipping its ice plant with additional machinery which will increase its capacity from 20 tons to 60 tons per day.

W. G. Moore, San Saba, will construct an irrigation pumping plant on the San Saba River.

W. R. Eidson, Alamogordo, N. M., will rebuild the electric light and power plant which he recently purchased from the Alamogordo Water Power Company. Complete electrical equipment will be installed.

## San Francisco

SAN FRANCISCO, CAL., March 31, 1914.

The machine tool trade has been helped out materially by the belated awarding of contracts for the Navy repair ship Prometheus, which has been one of the largest lists before the trade in a long time. The majority of it went to Manning, Maxwell & Moore, the remainder being well distributed among various local firms. Except for this there has been nothing important, but general business is showing signs of improvement. A somewhat better demand for foundry supplies is noted in the last few days, and the single tool business with country shops and garages is keeping up well. Additional inquiries are coming out for the municipal railroad shops. Some important deals are said to be in prospect, but there is no present indication of their being closed, and railroad business in tools is lacking, but they are making inquiries for cars, locomotives and general equipment. A little more stir is noted in most lines of miscellaneous machinery. Dullness has now continued so long that it will take some time to bring local shops to a normal state of activity. The demand for canning machinery is brisk as many factories are being built, and all the canners are preparing to put up an extremely heavy pack. There is some tentative figuring on sawmill equipment, but current business is mainly confined to single machines and extra parts. Mines continue to buy freely, and a few good sized quarry orders are coming out.

The Union Iron Works, San Francisco, has had plans drawn for a \$30,000 concrete hospital building.

The Byron Jackson Iron Works, San Francisco, is preparing to add a new office building to its plant at Berkeley, Cal.

The Marine Mechanical Works, San Francisco, has secured a permit to build a foundry on municipal land at Los Angeles harbor.

The American-Hawaiian Steamship Company is preparing to install electric cranes and conveyors on piers 30 and 32, San Francisco. All the new piers have been designed for the installation of cranes.

C. C. Moore & Company, San Francisco, have the contract for installing an auxiliary power plant for the Inspiration Company and the International Smelting & Refining Company, Globe, Ariz.

The city of Newport Beach, Cal., is advertising \$25,000 of bonds for installing a municipal light plant.

Reclamation district No. 1500, Sacramento, Cal., is taking bids for six motor-driven centrifugal pumps, with 50-in. gate valves, etc.

Merralls Air, Steam & Gas Engine Company, San Francisco, has been incorporated with a capital stock of \$200,000, by E. G. Baker, M. J. Selly, W. A. Merralls, C. H. Ford and W. D. Mills.

The highway commission of Orange County, Cal., is figuring on the installation of a conveyor system at the county quarry.

The water commissioners of Santa Barbara, Cal., have taken figures on two electric locomotives.

The Giant Valve & Mfg. Company, Richmond, Cal., has been incorporated, with a capital stock of \$150,000.

The Universal Screen Company, Los Angeles, is preparing to build an addition to its factory.

A. W. Cox, Santa Maria, Cal., is putting in a small machine shop.

The Commercial Foundry Company, Los Angeles, has been incorporated with a capital stock of \$15,000 by W. Sharpe, S. G. Lowe, G. Downing, and others.

The Central Machinery Mfg. Company, Los Angeles, has been incorporated with a capital stock of \$10,000 by C. W. Kingsley, A. D. Yancey and W. J. Berwick.

The Schweitzer Machine Company, Tucson, Ariz., has been incorporated with a capital stock of \$35,000 by R. R. Schweitzer, George W. Field, and others.

B. B. Hook, Los Angeles, is equipping a small machine shop at Coachella, Cal.

## The Pacific Northwest

SEATTLE, WASH., March 31, 1914.

From all appearances the depressed conditions in the Northwest, and on Puget Sound in particular, have been dissipated. Threatened labor misunderstandings have been settled amicably. Mills and logging camps have resumed operations and the mines are resuming work as the snows melt. Local machinery houses, as a whole, report a steady increase in business over last month.

The Pacific Cycle Car Company, Seattle, has been organized by Thomas F. Murphine, F. W. Bishop and T. Anderson.

The Panama Timber Company, Seattle, has been incorporated with a capital stock of \$50,000 by F. D. Jordan, and others, of Seattle.

The Yakima Valley Fruit Growers' Association, North Yakima, Wash., will erect a cold storage plant, with a capacity of 500 carloads, and a pre-cooling plant in connection, at Zillah, Wash. The estimated cost of the plant is \$70,000.

The town of Morton, Wash., is having plans prepared for the construction of a municipal water system. It is stated the plant will be completed within six months.

The Washington-Oregon Glass Company, 218 Marion street, Seattle, has been incorporated for \$200,000, not \$50,000, as has been stated.

Owen Brothers, Portland, Ore., have purchased a large tract of timber near Butte Falls. They plan the extension of the Pacific & Eastern Railroad seven miles, and the erection of a mill and box factory at Medford. More than \$100,000 will be expended.

The John S. Owen Company, Eau Claire, Wis., recently purchased from Ernest E. Hartman, Inc., Council Bluffs, Iowa, 5840 acres of timber near Medford, Ore. It is reliably reported that the purchasers intend erecting at least one mill and several box factories, and will make needed improvements and additions to the existing mills.

The Golden Gate Mining Company, Portland, Ore., was granted a permit to erect a power house. It expects to develop 500 hp. with an expenditure of more than \$25,000.

The City Council, of South Bend, Wash., has granted to Frank MacKean, and others, a light and power franchise, for supplying that city with electricity for lighting, etc. The company has given a guarantee to commence work on an electric plant within the year.

A. Klees & Son, present owners of the electric light plant, Summerville, Ore., has recently been reorganized as the Klees Water Power Company. The new concern is making plans for a central station and distributing system, including a steam power plant.

A. J. Walrath, Manhattan, Mont., is at the head of a movement to erect an elevator and flour mill. Plans have been formulated and most of the capital has been subscribed.

The Ray Jefferson Mining Company, Wallace, Idaho,

according to Don McGrath, the president, will make improvements including the installation of a compressor.

The Co-Operative Creamery Company, Meridian, Idaho, has plans completed for the construction of a creamery.

## Eastern Canada

TORONTO, ONT., April 4, 1914.

The International Mail Equipment Company of Canada, Toronto, has received an order for 100,000 rural mail boxes from the Dominion Government. The Canadian firm is a branch of the United States company of the same name and has no factory here. This order will make it necessary for the company to erect a factory in Canada in the near future.

The water commission, Ste. Catharines, Ont., will purchase a chlorinating plant for the city water system at a cost of approximately \$6000.

The Ontario Tire & Rubber Company, Ltd., Welland, Ont., will install machinery in a building it has purchased.

The Arena Company, Montreal, will erect an ice plant at an estimated cost of about \$60,000.

Ferguson & McFadden's saw mill at Tomigo village, near North Bay, Ont., was destroyed by fire. The loss is estimated at \$50,000.

The capacity of the salt refinery at Goderich, Ont., will be increased from 120 to 800 bbl. per day. The owner is John Ransford, Clinton, Ont.

The Niagara Grain & Feed Company, Ltd., will erect a mill at Port Colborne, Ont., to cost \$200,000.

The Canadian Aviation Company, Ltd., Toronto, has been incorporated with a capital stock of \$50,000 by William A. Dean, and others, to manufacture aeroplanes, etc.

The city of Hamilton is having plans prepared for a sewage disposal plant to cost about \$200,000.

The Chadwick Brass Company, Hamilton, Ont., has completed plans for a three-story machine shop and plating department.

The City Council, Dundas, Ont., has passed an ordinance for the construction of a sewerage disposal plant.

An addition is to be made to the plant of the Standard Underground Cable Company, Hamilton, Ont., to cost approximately \$90,000.

The McLean Construction Company, Ltd., Toronto, has been incorporated with a capital stock of \$500,000 by M. K. Lennox, B. F. Fisher, and others, of Toronto, to carry on a manufacturing and building business.

The Brantford Computing Scale Company, Ltd., Brantford, Ont., has been incorporated with a capital stock of \$150,000 by A. L. McPherson, J. L. Howard, F. H. Gott, and others, of Brantford, Ont., to manufacture scales, etc.

The Dominion Lock Company, Ltd., Toronto, has been incorporated with a capital stock of \$100,000 by A. C. Collins and J. J. Williams, of Toronto, and James King and others, of Chicago, Ill., to manufacture locks, hardware, etc.

The Bartlett Vehicle Patents, Ltd., Toronto, has been incorporated with a capital stock of \$250,000 by R. C. Bartlett, M. P. Van der Voort, and others, of Toronto, to manufacture patented devices for automobiles, etc.

In addition to the machinery to be shipped from Montreal for the Buffalo Forge Company's new plant at Berlin, Ont., \$25,000 worth of new equipment will be installed. The chief products of the company will be blacksmiths' forges, pumping engines, etc. Mr. Halfyard will be in charge.

The Midway Photo-Play Company, Ltd., Montreal, has been incorporated with a capital stock of \$90,000 by H. Koutsogianopoulos, Godefroy Leblanc, and others, of Montreal, to manufacture moving picture machines, lenses, carbons, etc.

Fire caused \$15,000 damage to the car barns of the Toronto and York Radial Railway Company, Toronto, including valuable railroad equipment.

Engineer T. Aird Murray, Whitby, Ont., has been

authorized to prepare plans for sewers and disposal works at a cost of about \$100,000.

The ratepayers of Orillia, Ont., passed a by-law to loan the J. I. Eaton & Sons Company \$50,000. In return the company will build a large planing mill and employ 450 men.

The Upton Electric Company, Ltd., Upton, Que., has been incorporated with a capital stock of \$99,000 by J. A. Bourbeau and G. W. Piche, of Montreal, R. Loiselle, and others, to carry on the business of a light, heat and power company.

The Bagot Electric Company, Saint-Pie, Que., has been incorporated with a capital stock of \$99,000 by J. T. Gazelle, A. M. Morin, and others.

## Western Canada

WINNIPEG, MAN., April 4, 1914.

Machinery houses at Winnipeg and some other central points in western Canada, report a better tone in business, although there is not much increase in volume. The weather is more spring-like, and preparations for new industrial operations are under way. Leading machinery firms are receiving fairly numerous inquiries. The financial situation is easier and projects that were delayed last year for lack of money will no doubt be undertaken this season.

The Stag Billiard Company, Ltd., Winnipeg, Man., has been incorporated with a capital stock of \$100,000 by Louis Silverman, Samuel Weiner, and others, to manufacture billiard tables, etc.

An explosion destroyed a large amount of machinery at the Edmonton Iron Works, Edmonton, Alta. The expense of repairing the damage will reach a large figure.

Tenders will be received by W. H. Stiles, town secretary, Humboldt, Sask., until Wednesday, April 15, for the following work: Contract B—Pump house and filter house; contract G—furnishing and installing pumping machinery; contract P—constructing ejector station; contract X—constructing sewage disposal works. Plans and specifications may be seen at the office of Chipman & Power, engineers, Winnipeg, Man., and Toronto, Ont., and at the town hall, Humboldt.

C. P. McLennan, Halifax, N. S., is engaged in the promotion of an English company for the manufacture of locomotives at Fort William, Ont. It is incorporated under the name of the Anglo-Canadian Locomotive Company, with a capital stock of £1,000,000 of which £400,000 will be issued in England shortly.

The Ogilvie Flour Milling Company, Winnipeg, Man., will erect 15 elevators in Saskatchewan and Manitoba this year.

The British Columbia Steel Corporation, incorporated under the laws of British Columbia, will locate shops in Port Coquitlam, B. C., for the manufacture of structural steel and rolling stock. The executive offices are in Vancouver, B. C. Leon Melekov, Vancouver, is president.

The Western Canada Power Company, Vancouver, B. C., is preparing for a large amount of work at its generating plant at Stave Falls. General Manager Heywood states that a 13,000-hp. turbine, a 9000-hp. generator, five 3000-kw. transformers, etc., will be among the first installations. The plant now has a capacity of 25,000 hp., but with the additional unit installed will have 37,000 hp. capacity. The company plans to increase this capacity, until, at the end of 1915, it will have four units in operation, with a capacity of 52,000 hp. The Canadian Northwest Steel Company, Vancouver, is manufacturing the structural steel for the work.

The city of Prince Rupert, B. C., will receive bids for hydroelectric machinery, etc., during the next few months.

The Gutta Percha Rubber Co., Ltd., Regina, Sask., will erect a factory at a cost of about \$30,000.

The mill of the Westminster Woodworking Company, Ltd., Lulu Island, New Westminster, B. C., burned recently, with a loss of about \$75,000, including stock and equipment, will be rebuilt.

The Brooks-Scanlon Lumber Company, Ltd., Van-

couver, B. C., contemplates erecting a shingle mill at Dakota Creek, B. C.

A report from Melfort, Sask., states that O. H. Olson, Volga, S. D., may erect a flour mill of 250 or 300 bbl. capacity.

The Coquitlam Shipbuilding & Marine Railway Company, Port Coquitlam, B. C., recently announced that \$250,000 will be spent during the year in additions and improvements to the yards and plant.

## Government Purchases

WASHINGTON, D. C., April 6, 1914.

Bids will be received by the Bureau of Supplies and Accounts, Navy Department, Washington, until April 28, schedule 6604, for one engine lathe for Washington; schedule 6605, for one burnishing lathe for Norfolk; schedule 6607, for two pipe and nipple machines for Norfolk; until May 5, schedule 6603, for two 900-kw., 200-volt generators for Brooklyn; schedule 6608, for miscellaneous pumps for Battleship No. 39 at Brooklyn.

Bids will be received by the Purchasing Agent, Bureau of Engraving and Printing, Washington, until April 14, for furnishing 15 motor equipments for power plate printing presses.

Bids will be received by the U. S. Reclamation Service, 605 Federal Building, Los Angeles, Cal., until April 13, under advertisement No. 285, for one marine gasoline engine; until April 14, for a centrifugal pump for the Yuma project, Ariz. O. S. Ensign is the engineer in charge.

Bids were received at the Bureau of Supplies and Accounts, Navy Department, Washington, on March 31, for furnishing material and supplies for the navy yards as follows:

Schedule 6459, Steam Engineering.

Class 11, Brooklyn—Bid A, duty paid, 12 turbine-driven, forced-draft blowers, with spares. Bid 129, \$13,134.25; 163, \$12,870.25; 214, units; 238, \$10,745.

Bid B, Alternate—Duty free—Bid 238, \$10,491.

Schedule 6495, Ordinance.

Class 92, Washington—One 5-ft. full universal radial drill. Bid 9, \$1932; 85, \$1795; 126, \$1987, \$1902, \$1909, and \$1885; 151, \$1850 and \$1795; 178, \$1665 and \$1615.

Class 93, Washington—Two 3 by 36 flat turret lathes—Bid 120, \$3190; 126, \$2968; 257, \$4449.

Class 94, Washington—One boring and turning lathe, complete—Bid 122, \$7086, \$7294, \$6957 (alt.), and \$7019; 178, \$8390, \$8240, \$8030 (alt.), and \$7880 (alt.).

Schedule 6497, Steam Engineering.

Class 111, Norfolk—One portable motor-driven milling machine—Bid 89, \$238 and \$268; 151, \$290; 167, \$338 and \$390; 208, \$300.

The names of the bidders and the numbers under which they are designated in the above list are as follows:

9. Aumen Machinery Company.
85. Fairbanks Company, New York City.
89. Frevort Machinery Company.
120. Jones & Lamson Company.
122. L. H. Johnson, Jr., Company.
126. Kemp Machinery Company.
129. Kerr Turbine Company.
151. Manning, Maxwell & Moore.
163. A. H. McCay.
167. D. Naat Machinery Company.
178. Niles-Bement-Pond Company.
208. E. J. Rooksby & Co.
214. B. F. Sturtevant Company.
238. Terry Steam Turbine Company.
257. Warner & Swasey Company.

Bids were received by the U. S. Reclamation Service, 605 Federal Building, Los Angeles, Cal., on March 3, under advertisement No. 272-F, for a centrifugal pump for the Salt River project, Ariz.

Krough Mfg. Company, San Francisco, item 1, \$2000, San Francisco, 50 days; item 2, \$10 per ft.

United Iron Works, Oakland, item 1, \$2200, Oakland, 45 days; item 2, \$30.

Byron-Jackson Iron Works, Los Angeles, item 1, \$2500, West Berkeley, 35 days; item 2, \$12.

On March 23 bids were received under advertisement 278 for three triplex plunger pumps, geared to motors, for the Sun River project:

- Runsey & Co., Inc., Seneca Falls, \$600.15; 20 days.
- Smith-Booth-Usher Company, Los Angeles, \$619; 15 days.
- Terry Engine & Machine Company, Los Angeles, \$642; 20 days.
- Runsey & Co., Inc., Seneca Falls, N. Y., \$690.15; 20 days.
- Smith-Booth-Usher Company, Los Angeles, \$693; 15 days.
- Deane Steam Pump Company, Holyoke, \$922.50; 30 days.

## Judicial Decisions

ABSTRACTED BY A. L. H. STREET

**CONSTITUTIONALITY OF THE ILLINOIS WORKMEN'S COMPENSATION ACT.**—The provisions of the Illinois workmen's compensation act are not unconstitutional as class legislation. Nor is the requirement that an injured employee submit to a physical examination to determine the nature and extent of his injury unconstitutional as constituting a deprivation of liberty, or as authorizing an unreasonable search. The provision making a personal injury claim a preferred claim against the employer, and prohibiting waiver by an employee as to the amount of compensation payable to him for an injury, is not invalid as unduly abridging the freedom to contract guaranteed by the constitution. (Illinois Supreme Court, Deibeikis vs. Link-Belt Company, 104 Northeastern Reporter 211.)

**WHAT CONSTITUTES PERSONAL INJURY.**—Loss of the sight of a workman's eyes, caused by an acute attack of optic neuritis produced by poisonous coal tar gases escaping from furnaces about which he was required to work, constitutes a personal injury for which he is entitled to recover under the Massachusetts workmen's compensation act. (Massachusetts Supreme Judicial Court, in re Hurle, 104 Northeastern Reporter 336.)

**ASSUMPTION OF RISK BY WORKMAN.**—An operator of a pneumatic riveter assumed the risk of being injured through automatic starting of the machine, due to unexhausted air remaining in the hose after the valve had been shut off, if by the exercise of ordinary care he could have ascertained that the unexhausted air would start the machine. (Indiana Appellate Court, Dodge Mfg. Company vs. Kronewitter, 104 Northeastern Reporter 99.) But where a crane operator complained to his foreman that a warped gear wheel made his work unsafe, the operator did not assume the risk of being injured on remaining at work, unless, through lapse of an unreasonably long time for making the repairs, it became apparent that his complaint was to be disregarded. (Indiana Supreme Court, Inland Steel Company vs. Gillespie, 104 Northeastern Reporter 76.)

**ASSUMPTION OF RISK BY EMPLOYEE.**—An employee directed to repair furnace pipes assumed the risk of being overcome by gases and falling from the ladder on which he was at work, where he was twice forced to descend from the ladder on account of the gases; the accident cannot be attributed to his employer's failure to provide a scaffold or bridge for the performance of his work. (Pennsylvania Supreme Court, Dellasalla vs. Josephine Furnace & Coke Company, 89 Atlantic Reporter 660.) But a workman in an industrial plant did not assume the risk of falling through an unguarded hole in the floor in the night, caused by removal of an iron plate which ordinarily covered the hole. (Pennsylvania Supreme Court, Killmeyer vs. Forged Steel Wheel Company, 89 Atlantic Reporter 810.)

**RISK IN PILING IRON.**—An employee engaged in piling iron assumed the risk of being injured on account of a collapse of the timbers which formed the foundation of the pile, if the same foundation had been previously used without giving any indication of weakness, and if the danger of such an accident was just as apparent to the workman as to the employer. When employees engaged in such work select insufficient pieces of timber, when adequate pieces are at their disposal, they cannot recover for consequent injury. (Iowa Supreme Court, Miller vs. Hart-Parr Company, 144 Northwestern Reporter 589.)

**LIABILITY FOR DEFECT IN LADDER.**—A workman assumes the risk of being injured on account of the absence of a rung from a ladder if he had reasonable opportunity to know that the rung was missing. (Washington Supreme Court, Dahl vs. Puget Sound Iron & Steel Works, 137 Pacific Reporter 315.)

**FAILURE TO ADOPT SIGNALS AS NEGLIGENCE.**—An employer in operating a freight elevator is bound to adopt reasonable rules to prevent injury to employees in movement of the elevator, but is not required to use the best system known. (New York Court of Appeals, Knickerbocker vs. General Railway Signal Company, 103 Northeastern Reporter 765.)

## Trade Publications

**Silent Chain Drive.**—Link-Belt Company, Chicago, Ill. Data book No. 125. Describes the many uses of silent chain for the efficient transmission of power and gives complete engineering information on silent chain driving in simple and compact form, as well as specific reasons and illustrations showing its application in a great variety of cases, the information having been secured from over 200,000 installations. Information is given which will enable users of power to select the correct drives for their work and determine the exact cost from the list prices shown in the book. This chain consists of a series of links connected by segmental case-hardened bushings and case-hardened steel pins. It is claimed to be as flexible as a leather belt and as positive as a gear. Its rated efficiency is 92.2 per cent. on actual tests.

**Locomotive Crane.**—McMyler Interstate Company, Cleveland, Ohio. Bulletin No. 30. Presents a brief description of the principal features of the company's standard gauge locomotive crane, with particular reference to its suitability for a large variety of uses and its convertibility. A number of the various classes of work that can be handled by it are given, followed by a description of the crane, which is supplemented by a number of engravings, showing it in use with different attachments.

**Tube Expanders, Punches, Pumps and Jacks.**—A. L. Henderer's Sons, Wilmington, Del. Catalogue No. 10. Covers an extensive line of tools which includes flue and tube expanders, boilers, superheaters, etc., screw and hydraulic punches, pumps and hydraulic jacks. All of the various appliances are illustrated and briefly described with tables of the various sizes in which they can be furnished. The punches shown include those for pipe as well as screw punches for I-beams and other structural shapes. A number of designs showing the various punches and dies that can be supplied are included. Directions for operating the hydraulic jacks, which are made in a number of different styles for various purposes, and also for the hydraulic punching and shearing machines are included.

**Electric Tools.**—Chicago Pneumatic Tool Company, Fisher Building, Chicago, Ill. Bulletins Nos. E-31 and E-32, the latter superseding E-128. The former is concerned with a drilling stand for use in connection with the Duntley electric drilling machines to convert them into the sensitive type. Views of the stand and the various kinds of drills supplied for use in connection with them are presented. The other bulletin describes a line of portable electric tools designed especially for use on street and interurban railways. All of these are illustrated and in some cases views are given of the tools in use. A partial list of users is included.

**Revolving Rack Oven.**—Hermann Gehrich, 60 Franklin avenue, Brooklyn, N. Y. Circular. Describes a round revolving rack oven which is used for drawing, bluing and heat treating. An illustration of the oven is given and there is a brief description of the way in which it is used in spring manufacturing plants.

**Drilling Machine Vise.**—E. A. Lueck Company, Enterprise Building, Milwaukee, Wis. Circular. Concerned with a device for drilling machines which was illustrated in *The Iron Age*, December 11, 1913. This vise was designed for handling all sizes and shapes of pieces and three views of it gripping a number of different shapes are given. For convenience in holding round work V-slots at right angles to each other are cut in the jaws.

**Ball Bearings.**—Hess-Bright Mfg. Company, Philadelphia, Pa. Set of data sheets. Give considerable information on the use of ball bearings in a number of different classes of work, together with descriptions of the bearings themselves and tables of dimensions. Practically all of the sheets contain diagrams of the bearings.

**Metal Culverts.**—Canton Culvert Company, Canton, Ohio. Folder. Relates to the Acme nestable culvert, which is made of corrugated galvanized sheets in a number of different sizes for use as a substitute for timber, tile, terra cotta, concrete or cast iron. The range of diameters of culverts that can be supplied is from 8 in. to 6 ft.

**Boring Bars.**—Gisholt Machine Company, Madison, Wis. Catalogue BB-1. Deals with a line of boring bars for use in the company's turret lathes. These bars are universal, as different types of cutters, such as expansion, solid or single end, can be used in them. A brief description of the bar is given, the text being supplemented by a number of engravings, and this is followed by a list with illustrations of the various types of cutters that can be used with the same bar. In connection with the views of the cutters, tables are given, showing the several sizes that can be furnished.

**Pipe and Fittings.**—Central Foundry Company, 90 West street, New York City. Circular. Relates to the products of this company, which include soil pipe, fittings, lamp posts, fresh air inlets, universal pipe, drain traps, valve boxes and

manhole frames and covers. A feature of the pamphlet is an illustration showing the use of the company's products in buildings and on and under streets.

**Brass Foundry Equipment and Elevators.**—Whiting Foundry Equipment Company, Harvey, Ill. Catalogues Nos. 108 and 109. The first supersedes catalogue No. 91, and treats of the line of brass foundry equipment. This includes furnaces, blast pipes, gratings, structural work for pits and cranes. Portions of some of the equipment, such as furnaces and tumbling barrels are illustrated and described, and there are views showing installations of general equipment. The second catalogue, which supersedes No. 90, relates to a line of elevators operated by compressed air, the hydro-pneumatic system, belts or electric power. Views of the different elevator machines that can be supplied are presented, together with diagrams of installations and views of the elevators installed in the plants.

**Induction Motor Starting Switch.**—Allen-Bradley Company, Milwaukee, Wis. Bulletin No. B-541, superseding that issued in March, 1913. Shows many improvements that have been made in the type H resistance starting switch for induction motors. This switch is designed for starting motors from 1 to 100 hp., switching them into and out of the circuit and protecting them against excessive voltage and loss of power. Descriptions of the different types are given, together with a number of wiring diagrams and dimension tables.

**Locks.**—Yale & Towne Mfg. Company, 9 East Fortieth street, New York City. Pamphlet. Gives a history of the company's trademark Yale and contains a record of the legal measures that have been found necessary for its protection. The pamphlet contains considerable information on the subject of trademarks, including a number of abstracts of cases that have been tried in the Courts to maintain the validity of the company's trademark.

**Galvanized Sheet Metal Products.**—Columbian Steel Tank Company, Kansas City, Mo. Catalogue. Contains illustrations of a number of different kinds of galvanized steel products. These include corrugated culverts, underground gasoline storage systems, waste and oil storage tanks, welded steel drums, etc.

**Pump Governor.**—Ronald Trist & Co., Ltd., 4 Lloyd's avenue, London, E. C., England. Pamphlet. Concerned with a device for shutting off the supply of steam to a pump when the pressure becomes excessive and for admitting a supply of steam when a pre-determined lower pressure is reached. The advantages of the governor are briefly touched upon and a description of the device is included. Both exterior and sectional views are presented.

**Worm Gears.**—Keystone-Hindley Gear Company, 704 Pennsylvania Building, Philadelphia, Pa. Catalogue. Shows various combinations of diameters and ratios of worm gears, suitable for the transmission of from 2 to 50 hp., under different conditions and for a variety of purposes. The information is presented in the form of a series of tables giving the ratios, the pitch diameter, the pitch and the number of teeth for the wheel and the pitch diameter, lead, number of threads and hand for the worm. Illustrations of some of the different gears are included, together with diagrams of the housings that can be supplied.

**Oilstone Grinding Machines.**—Mummert-Dixon Company, Hanover, Pa. Catalogue No. 5. Describes and illustrates a line of grinding machines, in which the abrasive element is an oilstone wheel. The general construction of the machines is touched upon, followed by illustrations of the several styles built, with a brief list of equipment and specifications.

**Spring Cotter Pins and Expansion Plugs.**—M. D. Hubbard Spring Company, Pontiac, Mich. Two leaflets. Illustrate a special type of spring cotter pin and an expansion plug for closing core holes. The pin is made with closed points so that it will enter the hole readily while by making one leg slightly longer than the other a hold is provided for the opening tool. A table of the lengths and sizes in which it can be supplied is given. The plug which is made in eight sizes, from  $\frac{3}{4}$  to  $2\frac{1}{4}$  in. in diameter is designed as a substitute for pipe plugs and is said to be much more easily inserted. A brief statement of the advantages of the plug are given, together with directions for its use.

**Silica Brick.**—Mt. Union Silica Brick Company, Mt. Union, Pa. Catalogue. Illustrates the various shapes manufactured, and contains considerable useful information in connection with the use of the brick. Views of the bricks are given with the different dimensions indicated thereon and there are also illustrations of the special bricks that can be supplied for copper smelting and refining reverberatory furnaces, continuous glass tanks, by-product coke ovens, etc. A set of tables giving the different amounts of brick required for various inside diameters of circles are included, together with comparative tables of thermometers, areas and circumferences of circles and weights of materials.

